

APPENDIX C

Mississippi River Borrow Area Sediment Analyses

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MISSISSIPPI RIVER BORROW AREA SEDIMENT ANALYSES

1.0 INTRODUCTION

The Mississippi River Borrow Area Sediment Analyses were completed in support of the Preliminary Design Phase for the Riverine Sand Mining / Scofield Island Restoration Project (Project). The Project is sponsored by the Louisiana Department of Natural Resources (LDNR), State of Louisiana Office of Coastal Protection and Restoration (OCPR) and NOAA Fisheries. The Project design is funded and authorized in accordance with the provisions of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) (16 U.S.C.A., Sections 3951-3956) and has been approved by the Public Law 101-646 Task Force. The Project's CWPPRA designation is BA-40.

The purpose of the analyses was to provide sediment characteristics and design data for the Mississippi River borrow areas which shall serve as the sand sources for restoration of the beach and dune system on Scofield Island as fully described in the Preliminary Design Main Report and Mississippi River Borrow Area Design Analysis (Appendix E).

The scope of services included laboratory sedimentologic analysis and soil classification of samples extracted from five vibracores in MR-B-09 and seven vibracores in MR-E-09 collected by Alpine Ocean Seismic Survey, Inc. in December 2008 as fully described in the Mississippi River Borrow Area Geotechnical Survey (Appendix B). The analyses were conducted by Coastal Technology Corporation, Inc. (CTC) and reviewed by Coastal Engineering Consultants, Inc (CEC).

2.0 SUMMARY OF PRIOR WORK

The selection of the Project borrow areas was based on the review of prior surveys and analyses that identified multiple areas within the river as containing significant quantities of beach compatible sand. The primary sources of this information included previous geophysical and geotechnical work performed by Coastal Planning and Engineering (CPE, 2004) and Finkl et al. (2005), transport methodology and conveyance corridor analysis (SJB and CEC, 2007a), Mississippi River mining impact assessment (SJB and CHF, 2007), Mississippi River borrow area mining technical analyses (SJB and CEC, 2007b; SJB and CEC, 2007c), previous cultural resources work performed by R. Christopher Goodwin & Associates, Inc. (CGA, 2008), and the Feasibility Study Phase analyses (SJB and CEC, 2008).

CPE (2004) and Finkl et al. (2005) identified potential sand sources within the lower Mississippi River including the two areas designated as MR-B and MR-E. Based on the subsequent surveys and analyses, the boundaries of the two areas were revised multiple times. For the Preliminary

Design Phase, these borrow areas have been designated as MR-B-09 and MR-E-09 to reflect that while the approximate locations remained the same, the design limits were refined.

3.0 PROJECT AREA AND LOCATION

Borrow Area MR-B-09 is located on the east side of the Mississippi River near Empire, [Plaquemines Parish](#), between approximate River Mile Marker (MM) 29 to 31, and Borrow Area MR-E-09 is located on the west side of the river south of Buras between approximate MM 23 to 24 as presented in Figure 1.

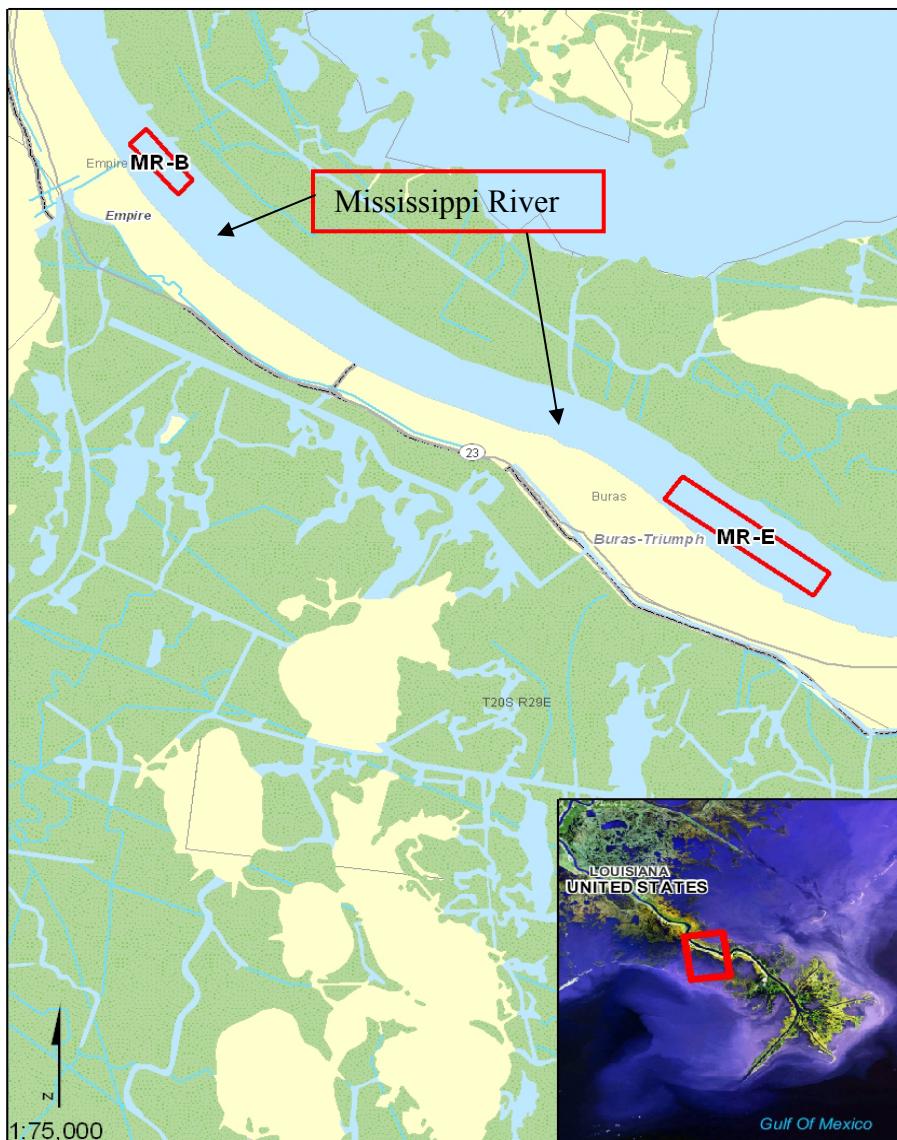


Figure 1: Mississippi River Borrow Area Location Map

4.0 SEDIMENT ANALYSIS METHODOLOGY

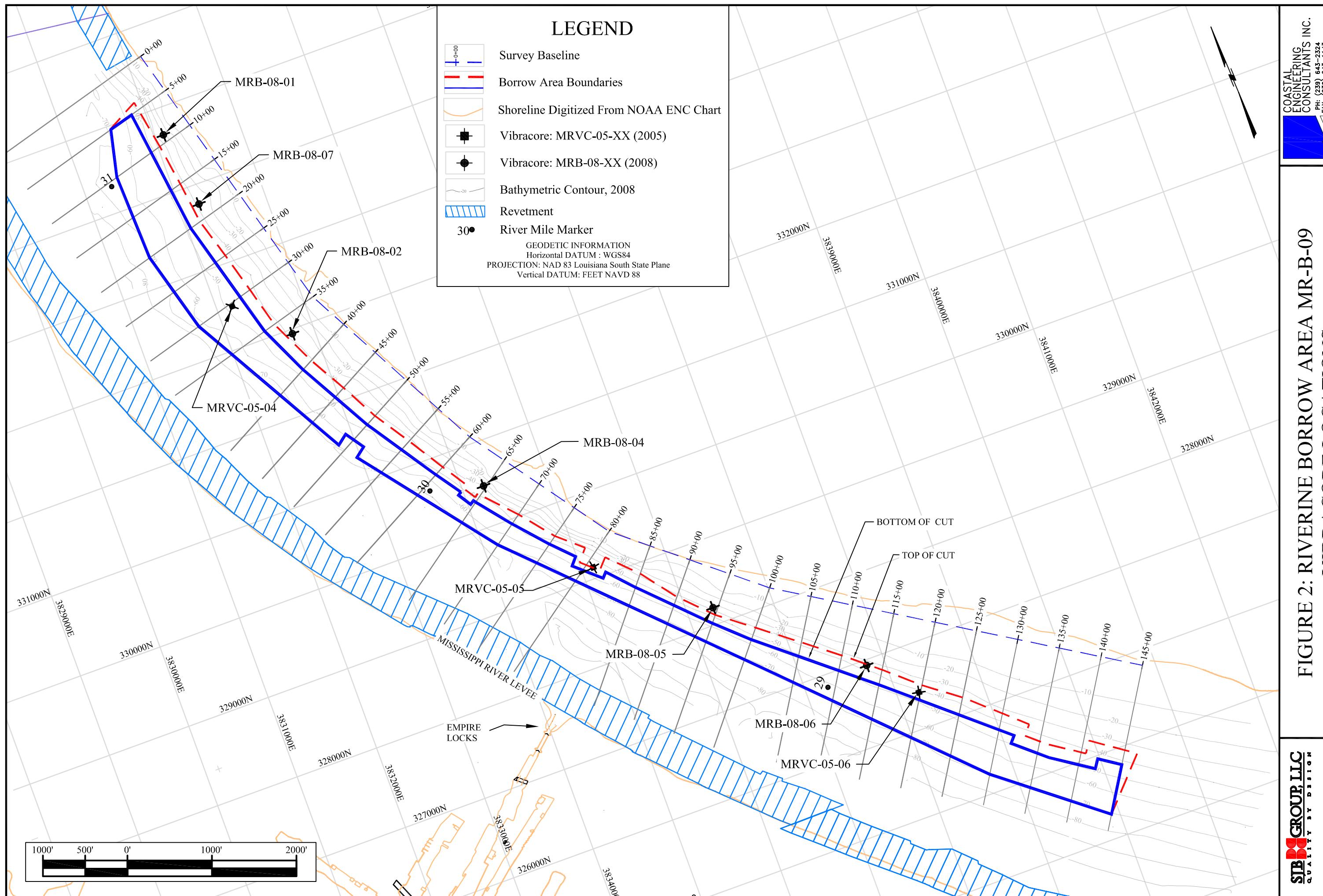
Twelve 20 to 30 ft vibracores were transferred to CTC's Coastal Geology and Sediments Laboratory in Melbourne, Florida. The composite summary table (Annex C1) presents a summary of the twelve cores.

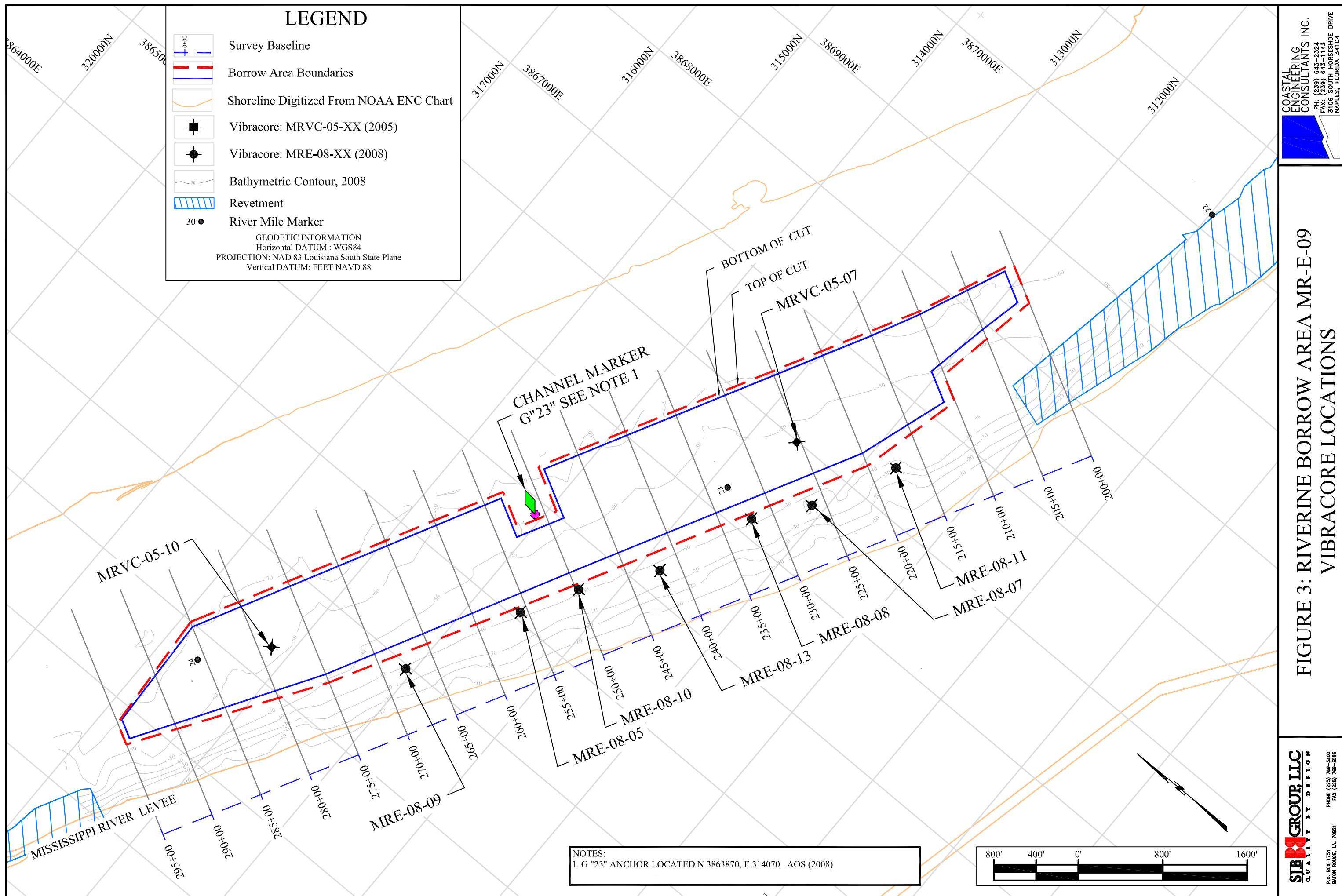
Each vibracore was: (1) split along the long axis, (2) logged by visual observation using ENG Form 1836 (Annex C2) and (3) photographed against an 18% gray background (Annex C3). Each vibracore was subsequently encapsulated in a plastic sleeve and stored at CTC's Sediments Lab until arrangements were made to transfer the vibracores to LDNR's storage facility. Locations of the vibracores are presented in Figures 1 and 2.

The cores were visually observed by a geologist for variations in sediment type using the Unified Soil Classification System (USC). Based on the visual observations, sediment samples were extracted from the cores in areas that were representative of the different sediment types on each core. The extracted samples were analyzed using standard laboratory methods including granularmetric properties in accordance with ASTM Standard D 422. Sandy samples were mechanically sieved denoted as standard samples.

The results of the gradation analysis were plotted using gINT software. This software generated a gradation curve identical to USACE ENG Form 2087. The software plotted both a cumulative frequency distribution curve and a frequency distribution histogram as one diagram. The sieve analysis was conducted at a minimum of $\frac{1}{2}$ phi intervals, using a range of screen openings capable of accommodating all grain-size classes contained in each sample. A total of 20 sieves were used ranging from -4.25 phi to +4 phi (-4.25 ϕ , -4.00 ϕ , -3.50 ϕ , -3.00 ϕ , -2.50 ϕ , -2.25 ϕ , -2.00 ϕ , -1.50 ϕ , -1.00 ϕ , -0.50 ϕ , 0.00 ϕ , 0.50 ϕ , 1.00 ϕ , 1.50 ϕ , 2.00 ϕ , 2.50 ϕ , 3.00 ϕ , 3.50 ϕ , 3.75 ϕ , 4.00 ϕ). Each sample was also assigned a descriptive classification using USC terminology. This classification was automatically generated by the gINT™ software when the sample contained less than 5% fines. The classification of samples containing fines in excess of 5% was based on examination by a qualified coastal geologist. Summaries of the sedimentologic analysis and granularmetric curves and tables for the standard samples are presented in Annexes C4 through C6.

Sediment samples with silt contents greater than 25% were also analyzed using a hydrometer in accordance with ASTM Standards D 1140 and D 422. Liquid limits and Wentworth soil classifications were not preformed as part of this analysis. As a result, sediments with greater than 50% of the material finer than 0.075 mm were classified as ML-CL in accordance with Unified Soil Classification System and are reported as fines. Summaries of the sedimentologic analysis and granularmetric curves and tables for the hydrometer samples are presented in Annexes C7 through C10.





5.0 REFERENCES

Christopher Goodwin & Associates, Inc. 2008. Phase I Marine Archeological Remote Sensing Survey of the Proposed Mississippi River Sand Borrow Sites for the Louisiana Coastal Area Barrier Shoreline Restoration Project, Plaquemines Parish, Louisiana (DRAFT). Submitted to U.S. Army Corps of Engineers, New Orleans District.

Coastal Planning & Engineering. 2004. Technical Assessment of Riverine Sand Mining to Support Scofield Island Restoration. Submitted to National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service.

Finkl et al., C.W., J.L. Andrews, L. Benedet, and T. Campbell. 2005. Geotechnical Investigation for Exploration of Sand Resources in the Lower Mississippi River and South Pass, and Exploration for Sand via Vibracoring in South Pelto Blocks 12 & 13. Boca Raton Florida: Coastal Planning & Engineering, Inc. 40p. Report Prepared for the Louisiana Department of Natural Resources, Baton Rouge, Louisiana.

SJB Group, LLC and C. H. Fenstermaker and Associates, Inc. 2007. Mississippi River Mining Impact Assessment Technical Memorandum, Task A.4.3 Riverine Sand Mining / Scofield Island Restoration (BA-40). LDNR Contract No. 2511-07-02, Technical Memorandum A.4.3. Submitted to Louisiana Department of Natural Resources, Coastal Engineering Division.

SJB Group, LLC and Coastal Engineering Consultants, Inc. 2007a. Transport Methodology and Access Corridors Technical Memorandum, Riverine Sand Mining / Scofield Island Restoration (BA-40). LDNR Contract No. 2511-07-02, Technical Memorandum A.4.1. Submitted to Louisiana Department of Natural Resources, Coastal Engineering Division.

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SJB Group, LLC and Coastal Engineering Consultants, Inc. 2008. Draft Feasibility Study Report. Mississippi River Riverine Sand Mining / Scofield Island Restoration (BA-40). LDNR

Contract No. 2511-07-02. March 10, 2008. Submitted to Louisiana Department of Natural Resources, Coastal Engineering Division.

ANNEX C1

COMPREHENSIVE SEDIMENTOLOGIC SUMMARY – BORROW AREAS MR-B-09 & MR-E-09

Comprehensive Sedimentologic Summary - Borrow Area MR-B-09

Vibracore	Sample Interval	Sample No.	gINT Granularmetrics							USC	Core Composite (WT%)		
			Size Class (wt%)				Descriptive Statistics						
			Gravel	Sand	<#200	<#230	Mean (mm)*	Verbal	Std. Dev.(phi)				
MRB-08-01	2.0-2.3	1	0.00	6.68	93.32	92.49	0.11	F	0.47	ML-CL	0.00% Gravel 43.73% Sand 0.02% Peat 54.25% Fines		
	16.0-16.3	3	0.00	99.25	0.75	0.52	0.21	F	0.55	SP			
	19.5-19.8	2	0.00	35.54	64.46	63.87	0.22	F	0.71	ML-CL			
	23.0-23.3	4	0.00	83.21	16.79	16.47	0.23	F	0.41	SM			
MRB-08-02	0.3-0.6	1	0.00	12.53	87.47	84.46	0.11	F	0.56	ML-CL	0.00% Gravel 45.93% Sand 0.40% Peat 53.67% Fines		
	2.0-2.3	2	0.00	99.34	0.66	0.60	0.23	F	0.39	SP			
	7.0-7.3	4	0.00	70.35	29.65	21.12	0.10	F	0.38	SM			
MRB-08-05	1.5-1.8	1	0.00	87.54	12.46	12.00	0.15	F	0.33	SM	0.00% Gravel 79.63% Sand 0.00% Peat 20.37% Fines		
	3.4-3.7	2	0.00	9.52	90.48	89.64	0.12	F	0.52	ML-CL			
	10.5-10.8	3	0.00	96.62	3.38	1.81	0.13	F	0.36	SP			
	18.5-18.8	4	0.00	96.46	3.54	2.48	0.13	F	0.46	SP			
MRB-08-06	1.9-2.2	1	0.00	3.14	96.86	96.70	0.14	F	0.70	ML-CL	0.01% Gravel 64.96 % Sand 0.00% Peat 35.04% Fines		
	5.0-5.3	3	0.00	98.29	1.71	1.09	0.14	F	0.31	SP			
	8.0-8.3	3(a)	0.00	98.97	1.03	0.71	0.15	F	0.36	SP			
	11.5-11.8	3(b)	0.00	96.24	3.76	2.95	0.14	F	0.28	SP			
	16.0-16.3	2	0.00	90.95	9.05	3.62	0.11	F	0.36	SP-SM			
	20.0-20.3	2(a)	0.08	94.05	5.87	3.76	0.15	F	0.52	SP-SM			
	23.0-23.3	4	0.00	7.17	92.83	91.48	0.11	F	0.61	ML-CL			
MRB-08-07	2.0-2.3	1	0.00	21.77	78.23	77.39	0.13	F	0.40	ML-CL	0.00% Gravel 36.70% Sand 0.15% Peat 63.15% Fines		
	7.0-7.3	2	0.00	84.78	15.22	12.36	0.19	F	0.62	SM			
	14.0-14.3	4	0.00	38.34	61.66	51.18	0.10	F	0.47	ML-CL			

*Mean grain size refers to coarse fraction only (>#200 sieve)

Comprehensive Sedimentologic Summary - Borrow Area MR-E-09

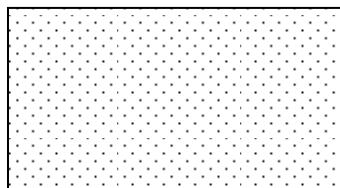
Vibracore	Sample Interval	Sample No.	gINT Granularmetrics							USC	Core Composite (WT%)		
			Size Class (wt%)				Descriptive Statistics						
			Gravel	Sand	<#200	<#230	Mean (mm)*	Verbal	Std. Dev.(phi)				
MRE-08-05	8.7-9.0	1	0.00	27.14	72.86	71.89	0.15	F	0.53	ML-CL	0.01% Gravel 82.73% Sand 0.00% Peat 17.26% Fines		
	15.5-15.8	3	0.00	99.29	0.71	0.36	0.22	F	0.43	SP			
	24.0-24.3	2	0.09	87.60	12.31	10.07	0.15	F	0.69	SM			
	26.0-26.3	4	0.00	88.46	11.54	8.31	0.15	F	0.63	SP-SM			
MRE-08-07	0.5-0.8	1	0.00	5.90	94.10	92.67	0.12	F	0.67	ML-CL	0.00% Gravel 78.67% Sand 0.00% Peat 21.33% Fines		
	2.5-2.8	2	0.00	98.91	1.09	0.78	0.20	F	0.42	SP			
	7.0-7.3	2(a)	0.00	98.19	1.81	1.00	0.15	F	0.35	SP			
	10.5-10.8	2(b)	0.00	98.60	1.40	1.10	0.23	F	0.37	SP			
MRE-08-08	0.5-0.8	1	0.00	76.07	23.93	23.41	0.22	F	0.44	SM	0.00% Gravel 37.17% Sand 0.00% Peat 62.83% Fines		
	2.0-2.3	2	0.00	8.99	91.01	90.73	0.19	F	1.62	ML-CL			
	6.7-7.0	4	0.00	43.52	56.48	47.56	0.10	F	0.51	ML-CL			
	9.5-9.8	5	0.00	50.20	49.80	39.54	0.09	F	0.42	SM			
	12.0-12.3	6	0.00	5.46	94.54	88.77	0.09	F	0.70	ML-CL			
	16.0-16.3	7	0.00	16.72	83.28	76.53	0.09	F	0.50	ML-CL			
	23.0-23.3	3	0.00	97.51	2.49	1.94	0.20	F	0.45	SP			
MRE-08-09	2.0-2.3	1	0.00	13.95	86.05	85.77	0.21	F	0.55	ML-CL	0.00% Gravel 46.44% Sand 0.10% Peat 53.46% Fines		
	6.0-6.3	2	0.00	95.19	4.81	4.21	0.19	F	0.51	SP			
	9.0-9.3	3	0.00	76.88	23.12	15.67	0.11	F	0.54	SM			
	11.0-11.3	4	0.00	94.23	5.77	4.41	0.13	F	0.41	SP-SM			
	16.0-16.3	6	0.00	14.10	85.90	81.40	0.09	F	0.56	ML-CL			
MRE-08-10	0.9-1.2	1	0.00	2.81	97.19	97.02	0.15	F	0.60	ML-CL	0.00% Gravel 79.77% Sand 0.00% Peat 20.23% Fines		
	2.4-2.7	2	0.00	78.29	21.71	21.35	0.19	F	0.38	SM			
	7.0-7.3	3	0.00	98.50	1.50	0.70	0.17	F	0.50	SP			
	13.5-13.8	3(a)	0.00	98.21	1.79	1.15	0.15	F	0.37	SP			
	17.6-17.9	4	0.00	22.34	77.66	71.55	0.10	F	0.48	ML-CL			
MRE-08-11	0.5-0.8	1	0.00	75.59	24.41	22.06	0.15	F	0.54	SM	0.00% Gravel 91.26% Sand 0.20% Peat		
	7.0-7.3	3	0.00	96.98	3.02	1.94	0.15	F	0.40	SP			
	16.0-16.3	2	0.00	87.58	12.42	8.32	0.12	F	0.40	SM			
MRE-08-13	5.0-5.3	1	0.00	88.27	11.73	10.45	0.13	F	0.40	SP-SM	0.00% Gravel 54.91% Sand 0.00% Peat 45.09% Fines		
	7.0-7.3	3	0.00	68.94	31.06	23.71	0.11	F	0.52	SM			
	9.0-9.3	4	0.00	68.70	31.30	22.76	0.10	F	0.47	SM			
	12.0-12.3	2	0.00	96.67	3.33	2.90	0.23	F	0.46	SP			
	14.5-14.8	5	0.00	16.50	83.50	81.51	0.16	F	0.78	ML-CL			

*Mean grain size refers to coarse fraction only (>#200 sieve)

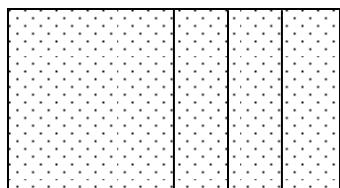
ANNEX C2

VIBRACORE LOGS

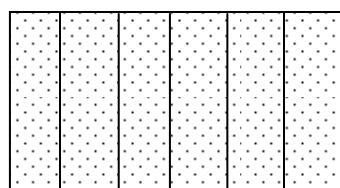
USC Hatching Legend for Vibracore Logs



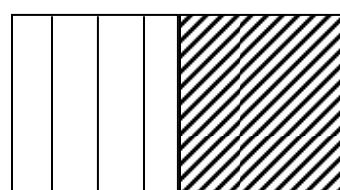
SP



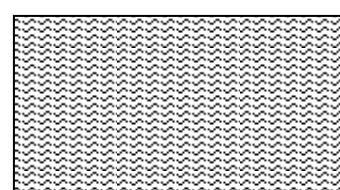
SP-SM



SM



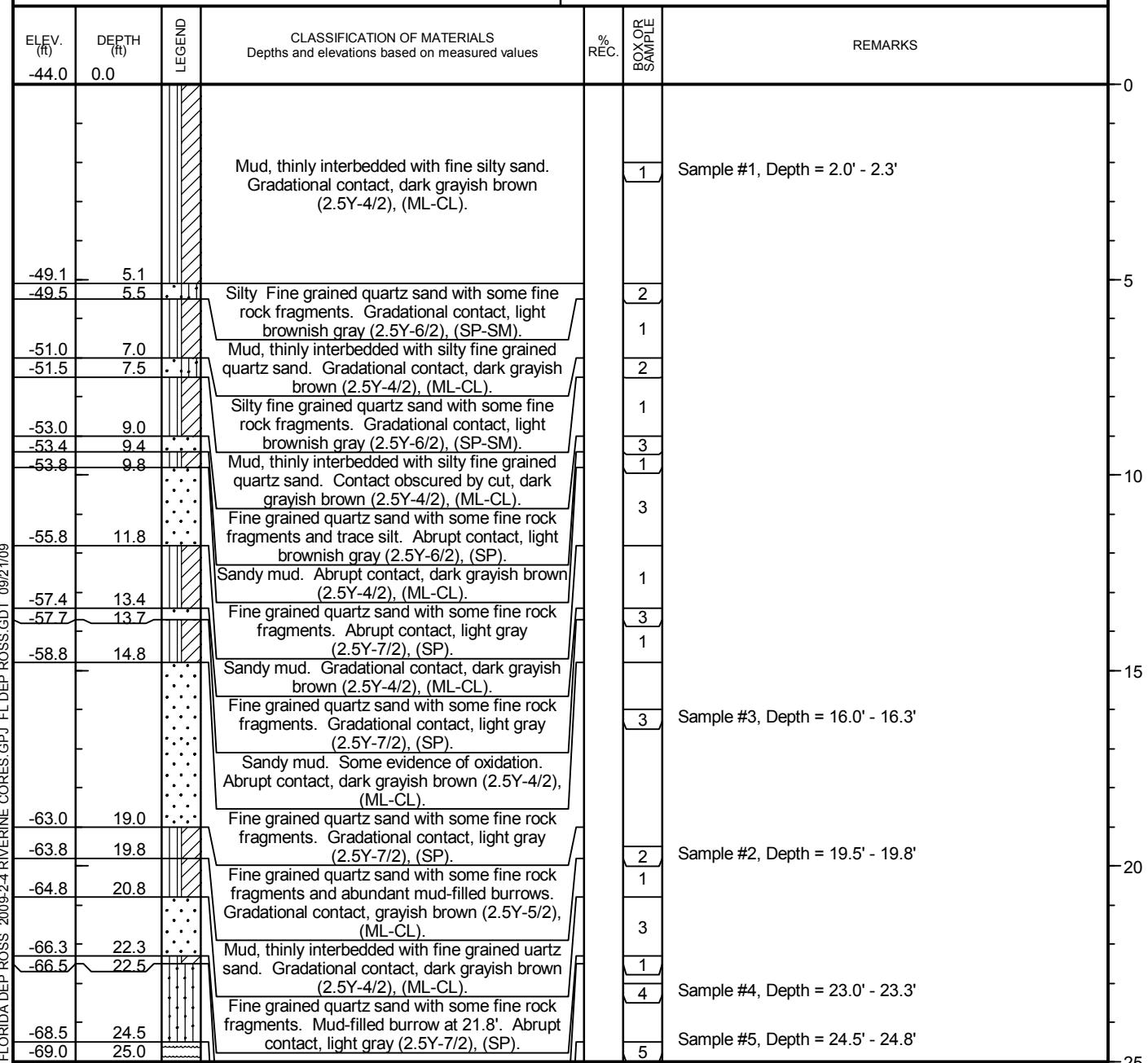
ML-CL



PT

Boring Designation MRB_08-01

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				Geographic (Latitude/Longitude)		NAD 1983	NAVD 88
2. BORING DESIGNATION MRB_08-01		LOCATION COORDINATES X = 29.412 Y = 89.602		11. MANUFACTURER'S DESIGNATION OF DRILL			
3. DRILLING AGENCY				CONTRACTOR FILE NO.			
4. NAME OF DRILLER Alpine				12. TOTAL SAMPLES			
5. DIRECTION OF BORING		DEG. FROM VERTICAL	BEARING	13. TOTAL NUMBER CORE BOXES			
<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				14. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN 0.0 Ft.				15. DATE BORING			
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				STARTED		COMPLETED	
8. TOTAL DEPTH OF BORING 25.8 Ft.				16. ELEVATION TOP OF BORING -44.0 Ft.			
				17. TOTAL RECOVERY FOR BORING 25 Ft.			
				18. SIGNATURE AND TITLE OF INSPECTOR			

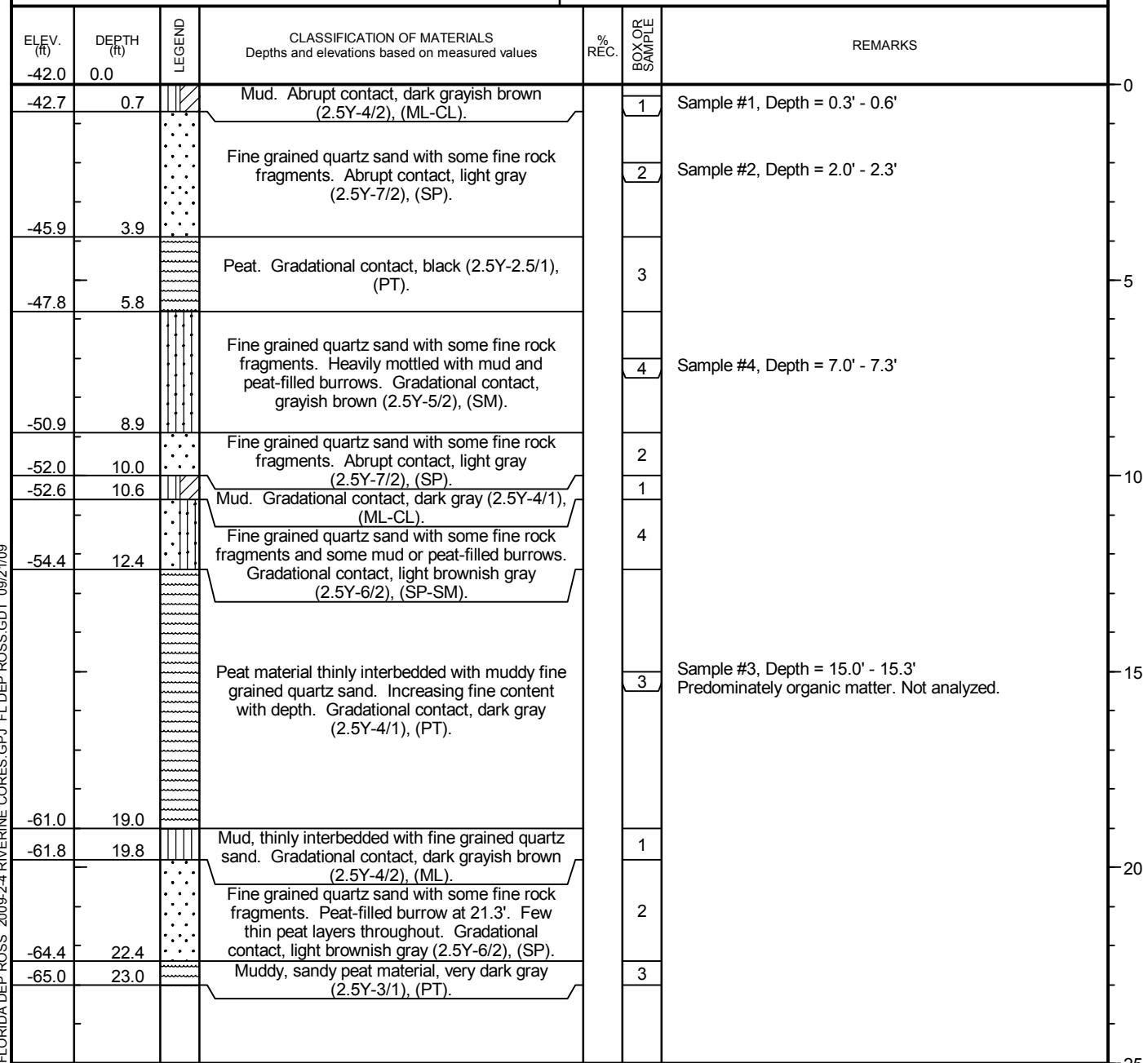


Boring Designation MRB_08-01

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS
PROJECT Riverine Sand Mining			COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL NAD 1983	VERTICAL NAVD 88
LOCATION COORDINATES X = 29 Y = 90			ELEVATION TOP OF BORING -44.0 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	% BOX OR SAMPLE	REMARKS
			Mud. Abrupt contact, dark grayish brown (2.5Y-4/2), (ML-CL). Silty fine grained quartz sand, decreasing fines with depth. Thinly interbedded peat material from 24'-24.5'. Gradational contact, light olive brown (2.5Y 5/3) to, light brownish gray (2.5Y-6/2), (SM). Sandy peat material and wood chips, olive brown (2.5Y-4/3), (PT).			Predominately organic matter. Not Analyzed.
			End of Boring			
						25
						30
						35
						40
						45
						50
						55

Boring Designation MRB_08-02

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT			
				10. COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL	VERTICAL
						NAD 1983	NAVD 88
2. BORING DESIGNATION MRB_08-02		LOCATION COORDINATES X = 29.404 Y = 89.6		11. MANUFACTURER'S DESIGNATION OF DRILL		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES		DISTURBED	UNDISTURBED (UD)
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN		0.0 Ft.		15. DATE BORING		STARTED 12-19-08	COMPLETED 12-19-08
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING		-42.0 Ft.	
8. TOTAL DEPTH OF BORING		26.9 Ft.		17. TOTAL RECOVERY FOR BORING		23 Ft.	
				18. SIGNATURE AND TITLE OF INSPECTOR			

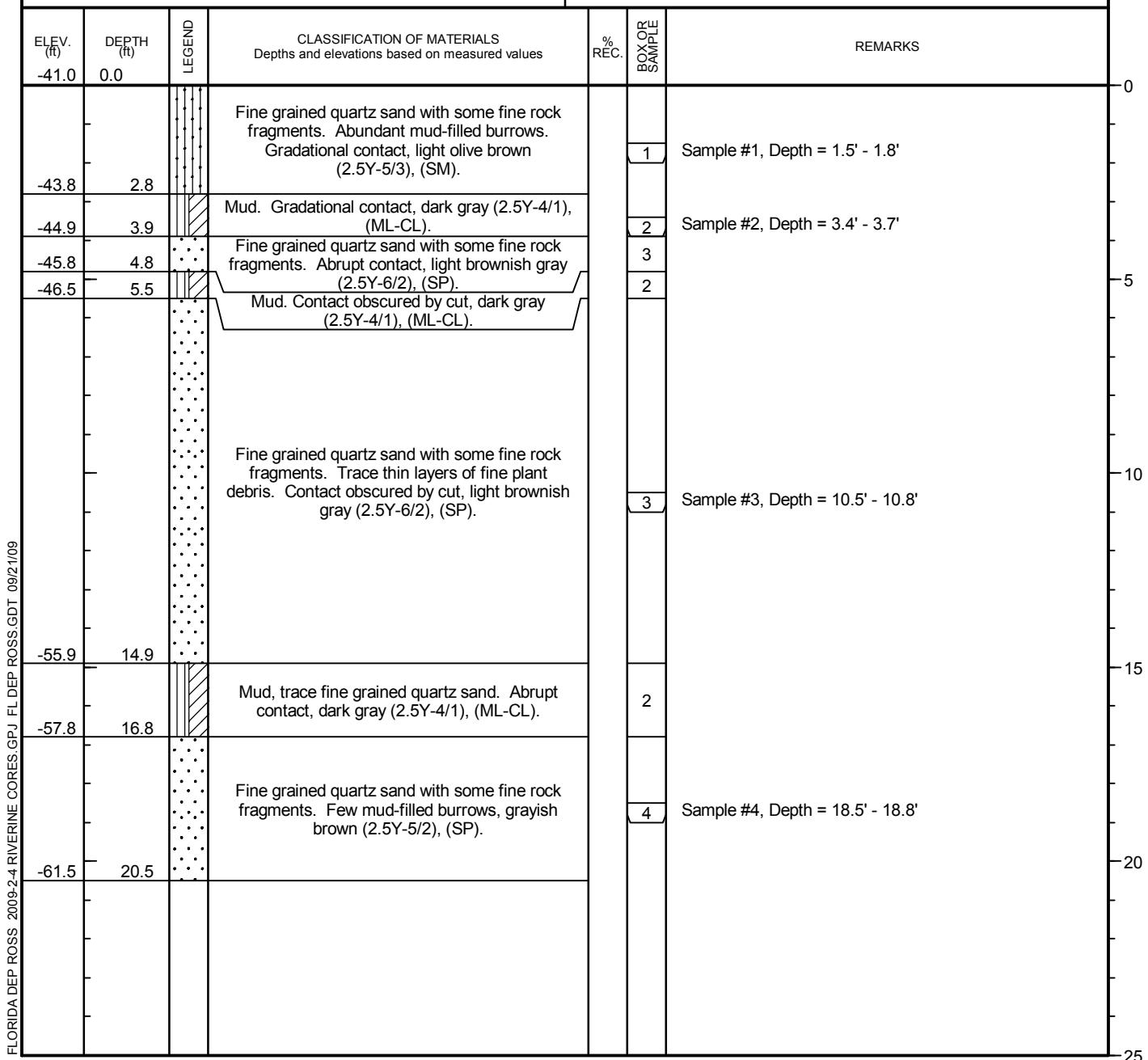


Boring Designation MRB_08-02

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS
PROJECT Riverine Sand Mining			COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL NAD 1983	VERTICAL NAVD 88
LOCATION COORDINATES X = 29 Y = 90			ELEVATION TOP OF BORING -42.0 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
			End of Boring			
						25
						30
						35
						40
						45
						50
						55

Boring Designation MRB_08-05

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT		
				10. COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude) HORIZONTAL NAD 1983		VERTICAL NAVD 88
2. BORING DESIGNATION MRB_08-05		LOCATION COORDINATES X = 29.391 Y = 89.589		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES DISTURBED		UNDISTURBED (UD)
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER		
6. THICKNESS OF OVERBURDEN		0.0 Ft.		15. DATE BORING STARTED 12-19-08		COMPLETED 12-19-08
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING -41.0 Ft.		
8. TOTAL DEPTH OF BORING		26.2 Ft.		17. TOTAL RECOVERY FOR BORING 21 Ft.		
				18. SIGNATURE AND TITLE OF INSPECTOR		

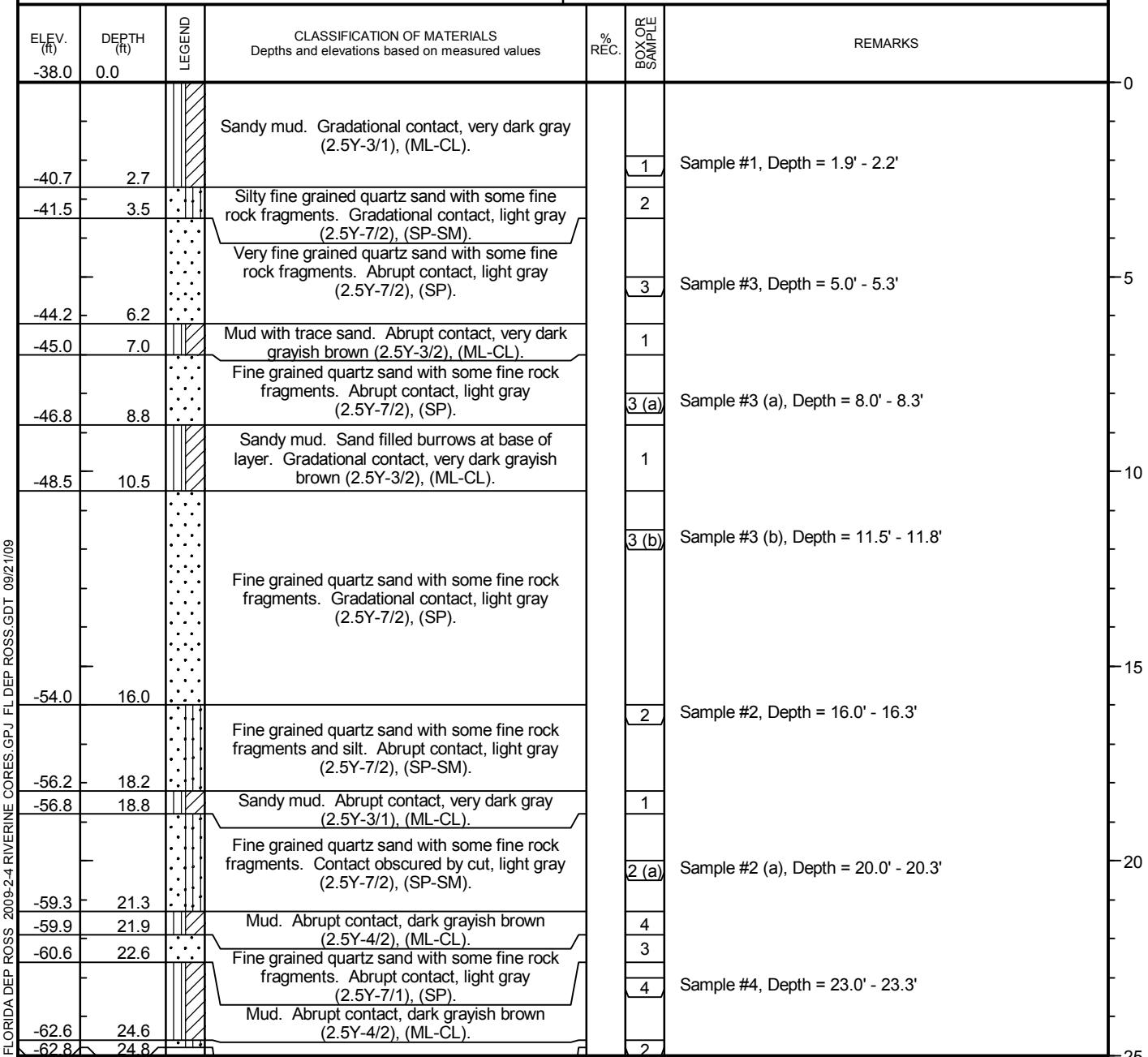


Boring Designation MRB_08-05

DRILLING LOG (Cont. Sheet)			INSTALLATION				SHEET 2 OF 2 SHEETS
PROJECT Riverine Sand Mining			COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)			HORIZONTAL NAD 1983	VERTICAL NAVD 88
LOCATION COORDINATES X = 29 Y = 90			ELEVATION TOP OF BORING -41.0 Ft.				
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values		% REC.	BOX OR SAMPLE	REMARKS
			End of Boring				
							25
							30
							35
							40
							45
							50
							55

Boring Designation MRB_08-06

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				Geographic (Latitude/Longitude)		NAD 1983	NAVD 88
2. BORING DESIGNATION MRB_08-06		LOCATION COORDINATES X = 29.387 Y = 89.584		11. MANUFACTURER'S DESIGNATION OF DRILL			
				<input type="checkbox"/> AUTO HAMMER		<input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY				12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)			
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF BORING		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			
<input checked="" type="checkbox"/> VERTICAL				15. DATE BORING STARTED COMPLETED			
<input type="checkbox"/> INCLINED				12-19-08		12-19-08	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				16. ELEVATION TOP OF BORING -38.0 Ft.			
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				17. TOTAL RECOVERY FOR BORING 24.6 Ft.			
8. TOTAL DEPTH OF BORING 29.8 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR			

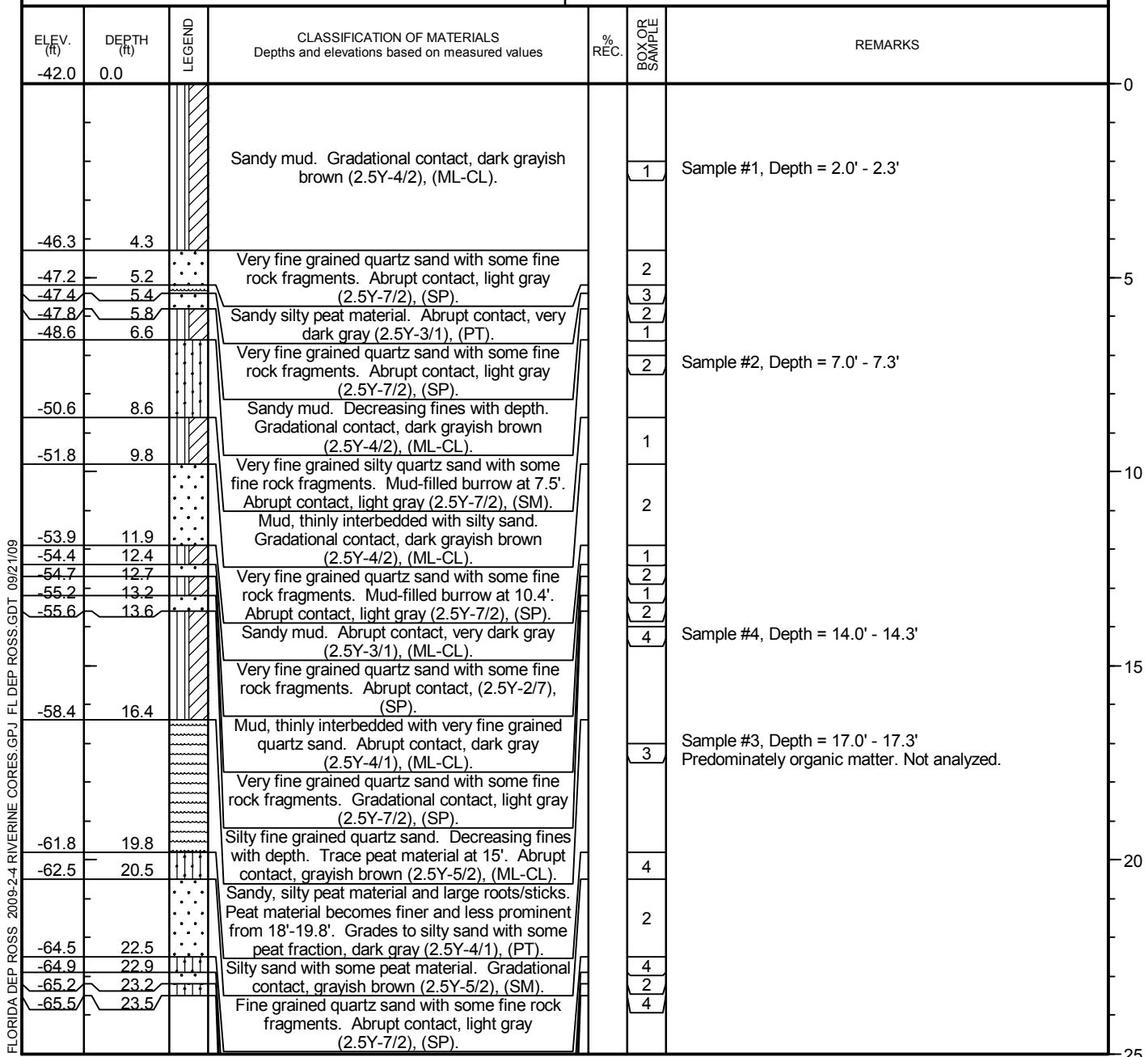


Boring Designation MRB_08-06

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS
PROJECT Riverine Sand Mining			COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL NAD 1983	VERTICAL NAVD 88
LOCATION COORDINATES X = 29 Y = 90			ELEVATION TOP OF BORING -38.0 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	% BOX OR SAMPLE	REMARKS
			Silty fine grained quartz sand with some fine rock fragments, light olive brown (2.5Y-5/4), (SP-SM).			
			End of Boring			
						25
						30
						35
						40
						45
						50
						55

Boring Designation MRB_08-07

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT			
				10. COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL	VERTICAL
						NAD 1983	NAVD 88
2. BORING DESIGNATION MRB_08-07		LOCATION COORDINATES X = 29.409 Y = 89.602		11. MANUFACTURER'S DESIGNATION OF DRILL		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES		DISTURBED	UNDISTURBED (UD)
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			
6. THICKNESS OF OVERTBURDEN		0.0 Ft.		15. DATE BORING		STARTED	COMPLETED
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING		-42.0 Ft.	
8. TOTAL DEPTH OF BORING		27.5 Ft.		17. TOTAL RECOVERY FOR BORING		23.5 Ft.	
				18. SIGNATURE AND TITLE OF INSPECTOR			

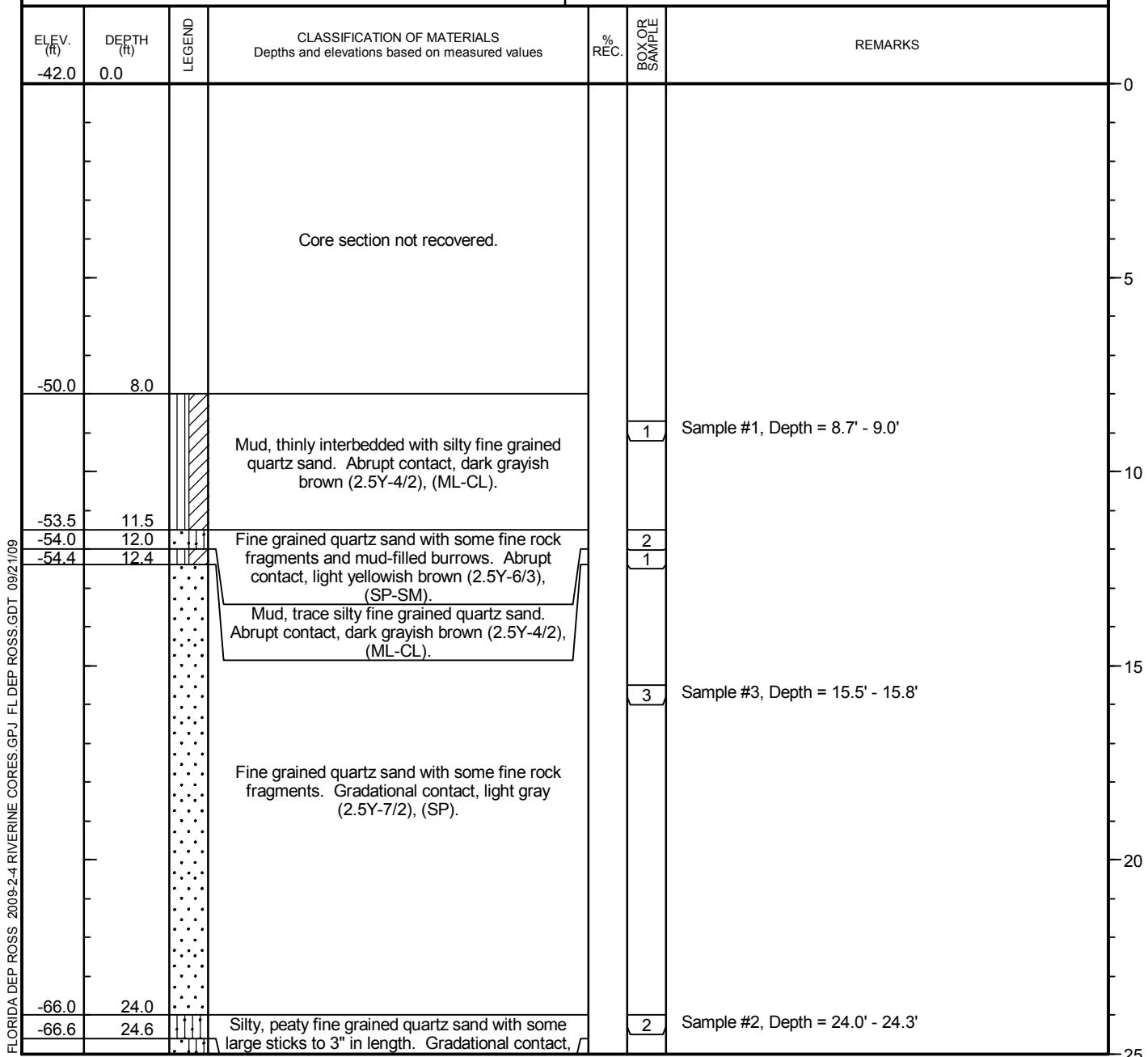


Boring Designation MRB_08-07

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS
PROJECT Riverine Sand Mining			COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL NAD 1983	VERTICAL NAVD 88
LOCATION COORDINATES X = 29 Y = 90			ELEVATION TOP OF BORING -42.0 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	% BOX OR SAMPLE	REMARKS
			Silty fine grained quartz sand with some peat material. Abrupt contact, dark grayish brown (2.5Y-4/2), (SM). Fine grained quartz sand with some fine rock fragments. Abrupt contact, light gray (2.5Y-7/2), (SP). Silty fine grained quartz sand, grayish brown (2.5Y-5/2), (SM).			
			End of Boring			
						25
						30
						35
						40
						45
						50
						55

Boring Designation MRE_08-05

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS		
1. PROJECT Riverine Sand Mining			9. SIZE AND TYPE OF BIT					
			10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL		
			Geographic (Latitude/Longitude)		NAD 1983	NAVD 88		
2. BORING DESIGNATION MRE_08-05		LOCATION COORDINATES X = 29.35 Y = 89.506		11. MANUFACTURER'S DESIGNATION OF DRILL				
3. DRILLING AGENCY			CONTRACTOR FILE NO.			12. TOTAL SAMPLES	DISTURBED	UNDISTURBED (UD)
4. NAME OF DRILLER Alpine						13. TOTAL NUMBER CORE BOXES		
5. DIRECTION OF BORING		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER				
<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				15. DATE BORING				
6. THICKNESS OF OVERBURDEN 0.0 Ft.			STARTED 12-18-08			COMPLETED 12-18-08		
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			16. ELEVATION TOP OF BORING -42.0 Ft.			17. TOTAL RECOVERY FOR BORING 20 Ft.		
8. TOTAL DEPTH OF BORING 28.0 Ft.			18. SIGNATURE AND TITLE OF INSPECTOR					



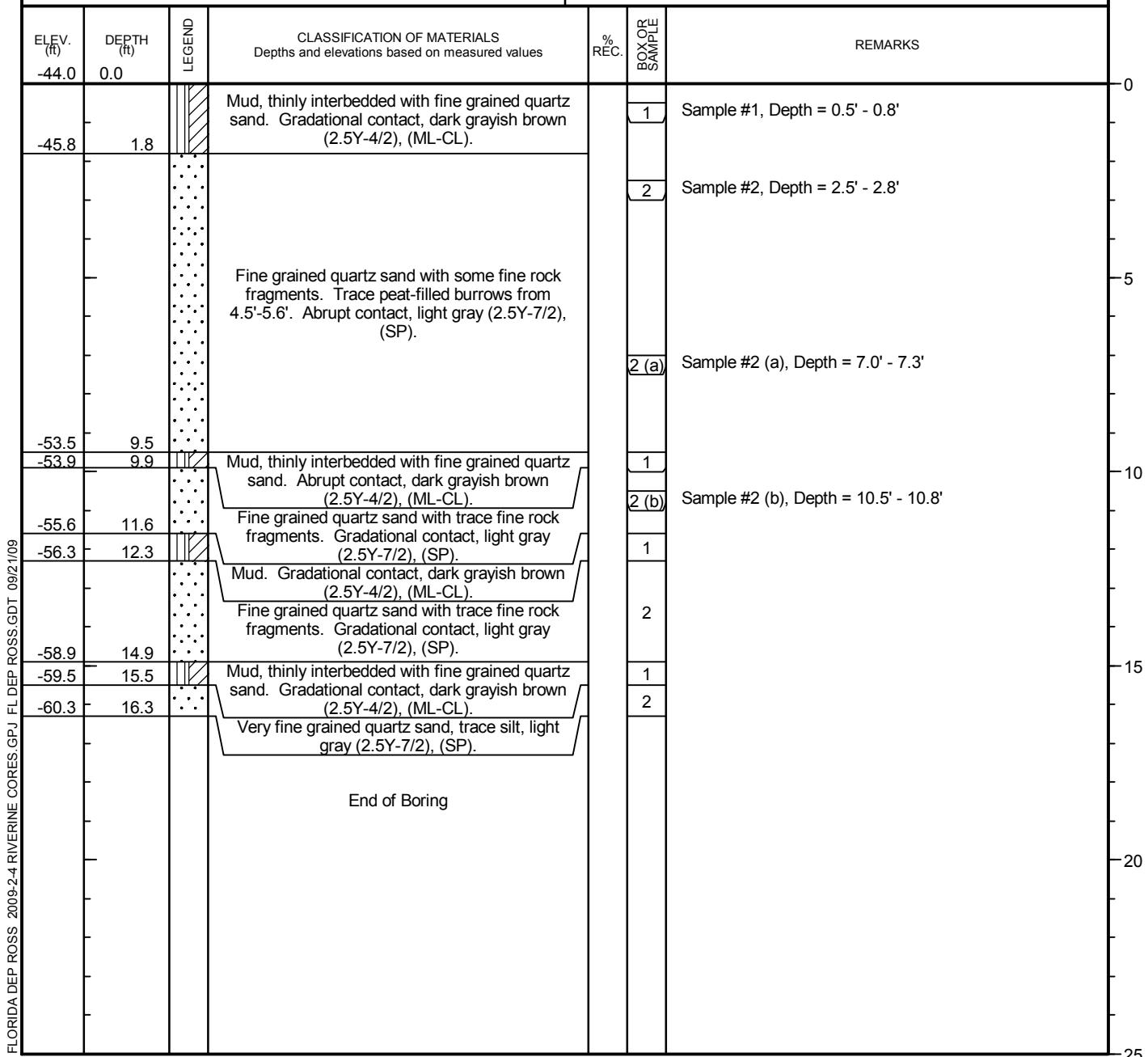
Boring Designation MRE_08-05

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS
PROJECT Riverine Sand Mining			COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL NAD 1983	VERTICAL NAVD 88
LOCATION COORDINATES X = 29 Y = 90			ELEVATION TOP OF BORING -42.0 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	% BOX OR SAMPLE	REMARKS
-70.0	28.0	.	grayish brown (2.5Y-5/2), (SM). Fine grained quartz sand with some fine rock fragments. Thinly interbedded with mud layers, dark grayish brown (2.5Y 4/2) to, light gray (2.5Y-7/2), (SP-SM). (continued)	4		Sample #4, Depth = 26.0' - 26.3'
			End of Boring			

FLORIDA DEP ROSS 2009-24 RIVERINE CORES.GPJ FL DEP ROSS.GDT 09/21/09

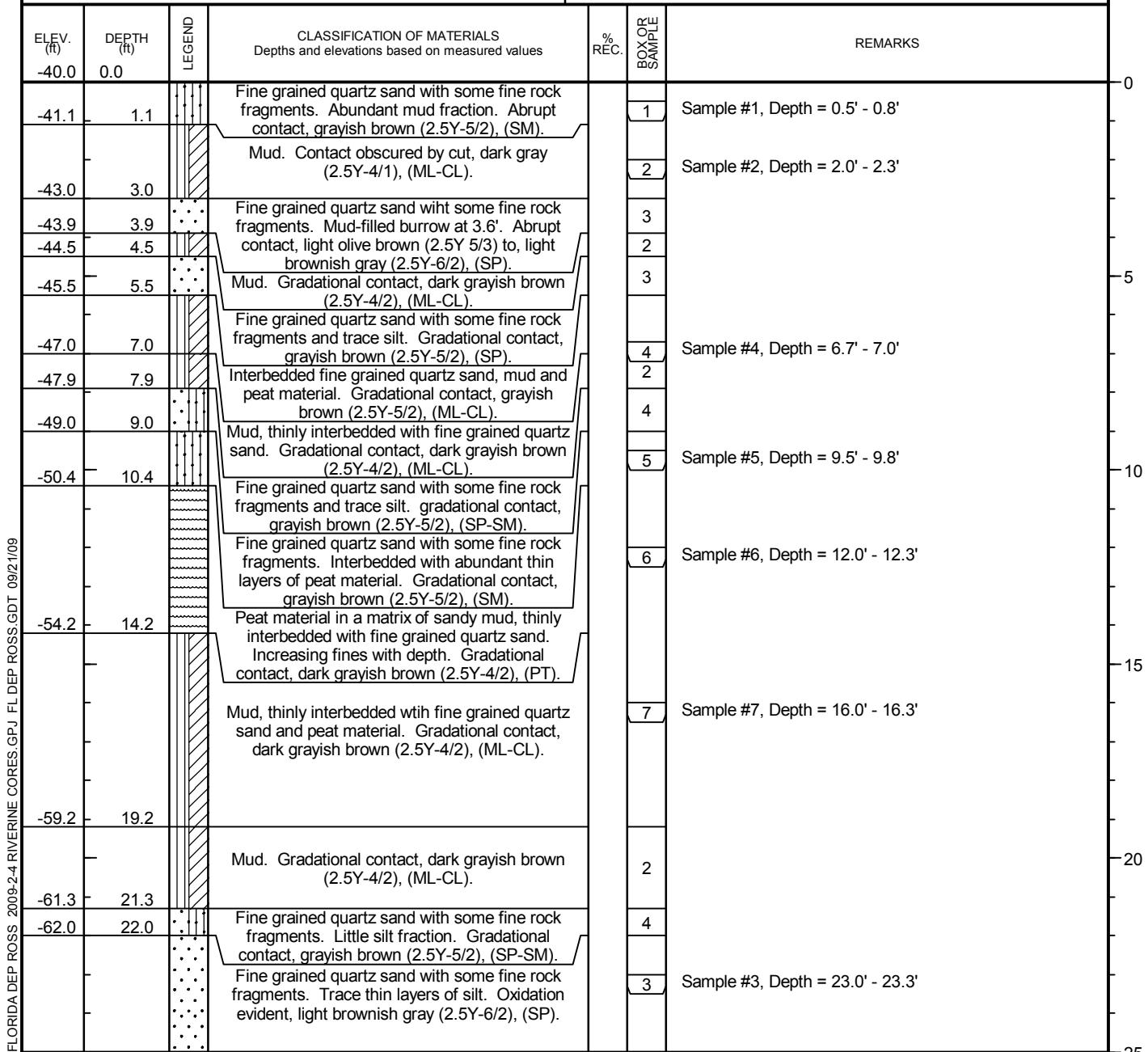
Boring Designation MRE_08-07

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT		
				10. COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude) HORIZONTAL NAD 1983		VERTICAL NAVD 88
2. BORING DESIGNATION MRE_08-07		LOCATION COORDINATES X = 29.345 Y = 89.498		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES DISTURBED		UNDISTURBED (UD)
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER		
6. THICKNESS OF OVERBURDEN		0.0 Ft.		15. DATE BORING STARTED 12-17-08		COMPLETED 12-17-08
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING -44.0 Ft.		
8. TOTAL DEPTH OF BORING		17.7 Ft.		17. TOTAL RECOVERY FOR BORING 16.3 Ft.		
				18. SIGNATURE AND TITLE OF INSPECTOR		



Boring Designation MRE_08-08

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT			
				10. COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
				Geographic (Latitude/Longitude)		NAD 1983	NAVD 88
2. BORING DESIGNATION MRE_08-08		LOCATION COORDINATES X = 29.347 Y = 89.499		11. MANUFACTURER'S DESIGNATION OF DRILL		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES		DISTURBED	UNDISTURBED (UD)
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF BORING		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			
<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				15. DATE BORING		STARTED 12-18-08	COMPLETED 12-18-08
6. THICKNESS OF OVERBURDEN		0.0 Ft.		16. ELEVATION TOP OF BORING		-40.0 Ft.	
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		17. TOTAL RECOVERY FOR BORING		25 Ft.	
8. TOTAL DEPTH OF BORING		28.9 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR			



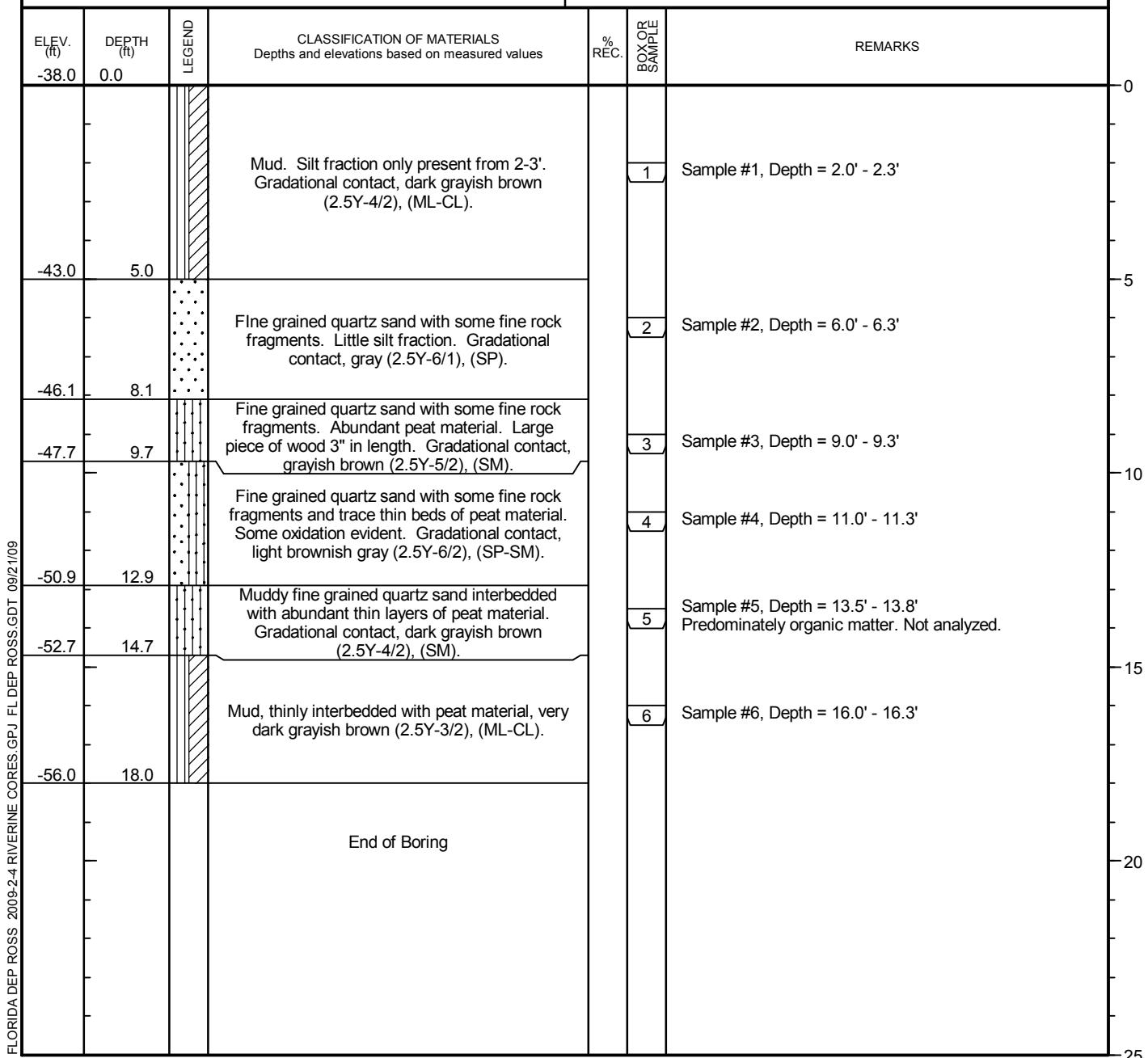
Boring Designation MRE_08-08

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS
PROJECT Riverine Sand Mining			COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL NAD 1983	VERTICAL NAVD 88
LOCATION COORDINATES X = 29 Y = 89			ELEVATION TOP OF BORING -40.0 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-65.1	25.1					
End of Boring						

FLORIDA DEP ROSS 2009-24 RIVERINE CORES.GPJ FL DEP ROSS.GDT 09/21/09

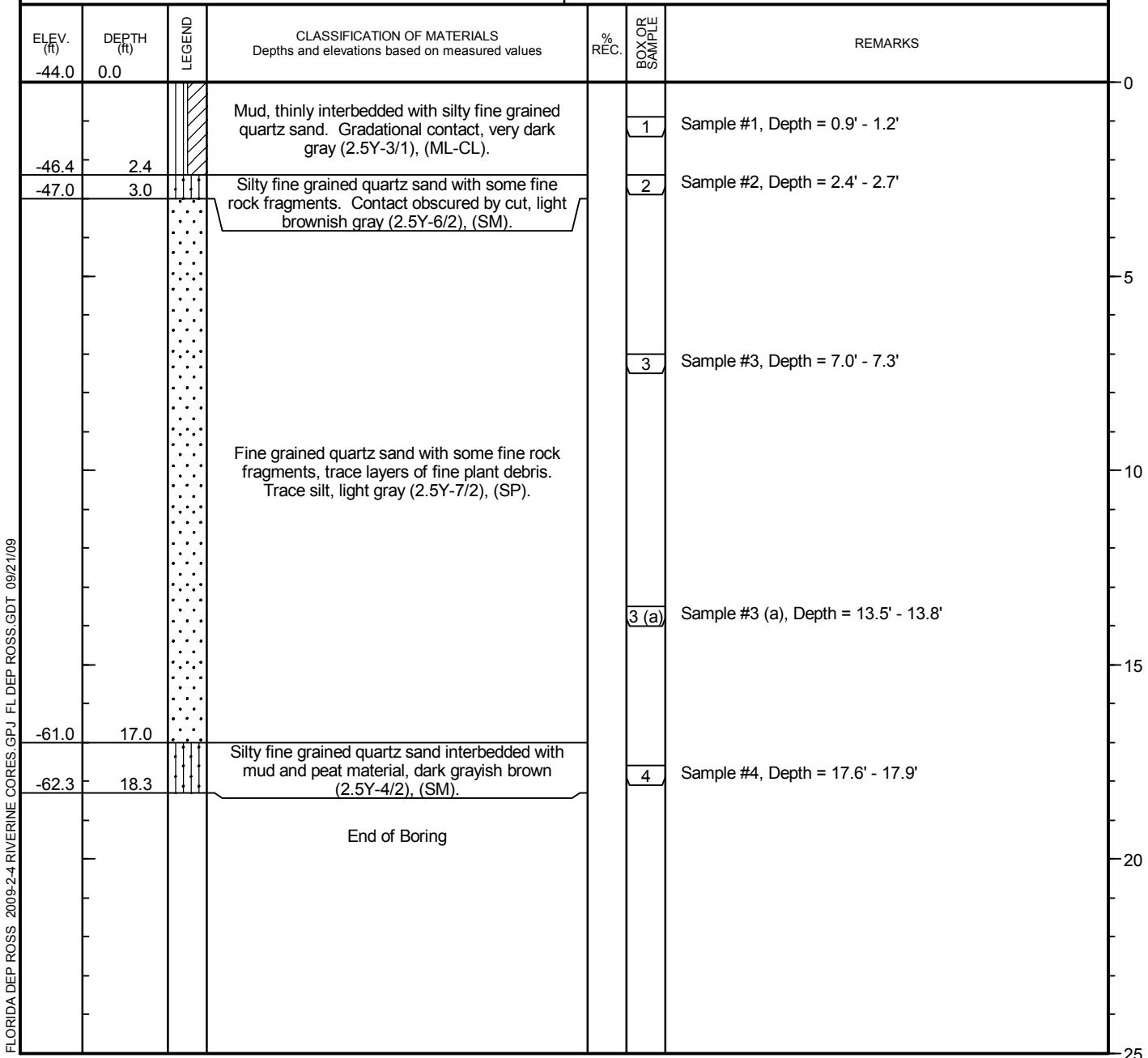
Boring Designation MRE_08-09

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT		
				10. COORDINATE SYSTEM/DATUM HORIZONTAL Geographic (Latitude/Longitude) NAD 1983		VERTICAL NAVD 88
2. BORING DESIGNATION MRE_08-09		LOCATION COORDINATES X = 29.351 Y = 89.509		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)		
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER		
6. THICKNESS OF OVERBURDEN		0.0 Ft.		15. DATE BORING STARTED 12-17-08		COMPLETED 12-17-08
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING -38.0 Ft.		
8. TOTAL DEPTH OF BORING		18.8 Ft.		17. TOTAL RECOVERY FOR BORING 18 Ft.		
				18. SIGNATURE AND TITLE OF INSPECTOR		



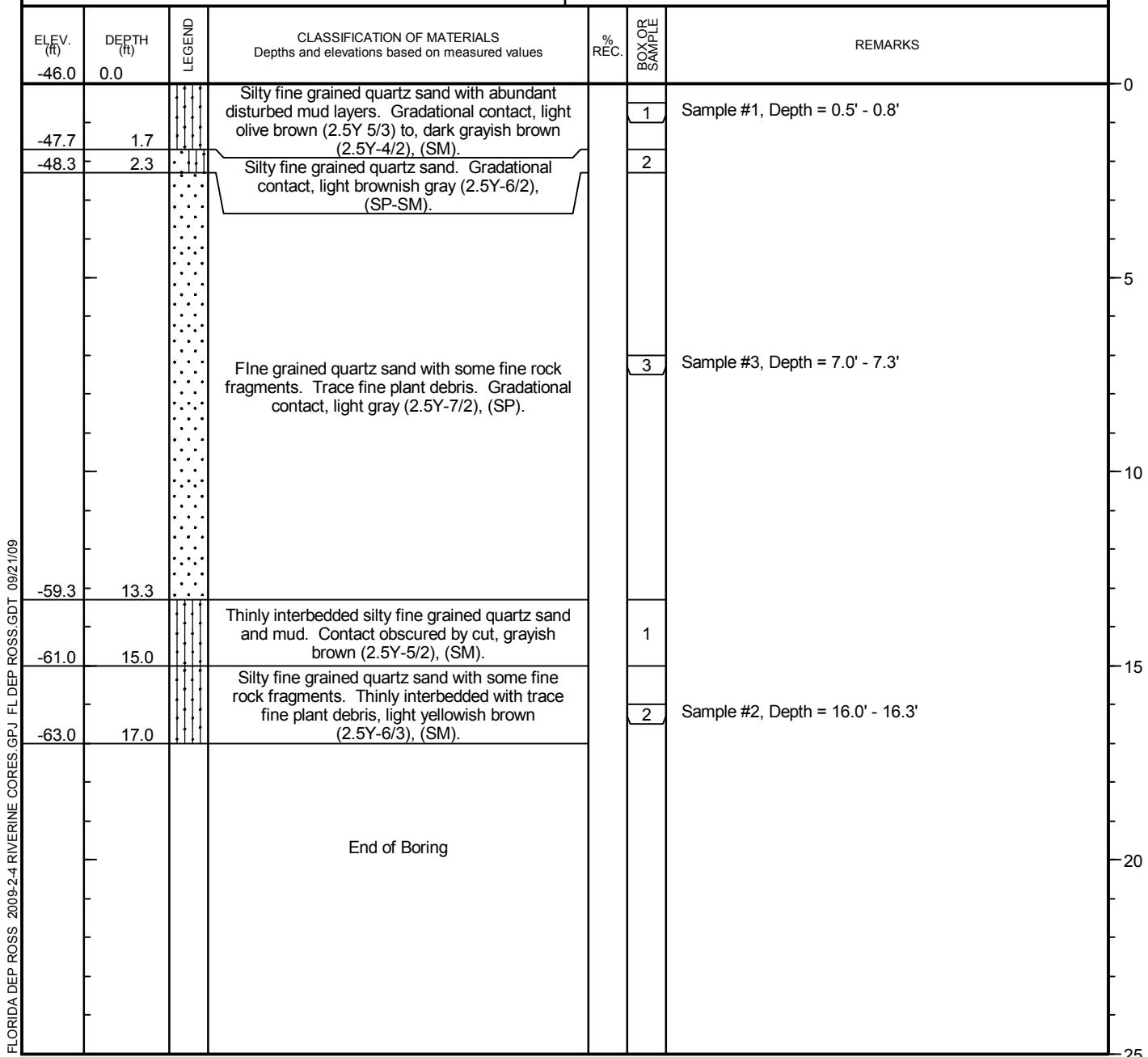
Boring Designation MRE_08-10

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT			
				10. COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL	VERTICAL
						NAD 1983	NAVD 88
2. BORING DESIGNATION MRE_08-10		LOCATION COORDINATES X = 29.349 Y = 89.504		11. MANUFACTURER'S DESIGNATION OF DRILL		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES		DISTURBED	UNDISTURBED (UD)
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN		0.0 Ft.		15. DATE BORING		STARTED 12-17-08	COMPLETED 12-17-08
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING		-44.0 Ft.	
8. TOTAL DEPTH OF BORING		18.6 Ft.		17. TOTAL RECOVERY FOR BORING		18.4 Ft.	
				18. SIGNATURE AND TITLE OF INSPECTOR			



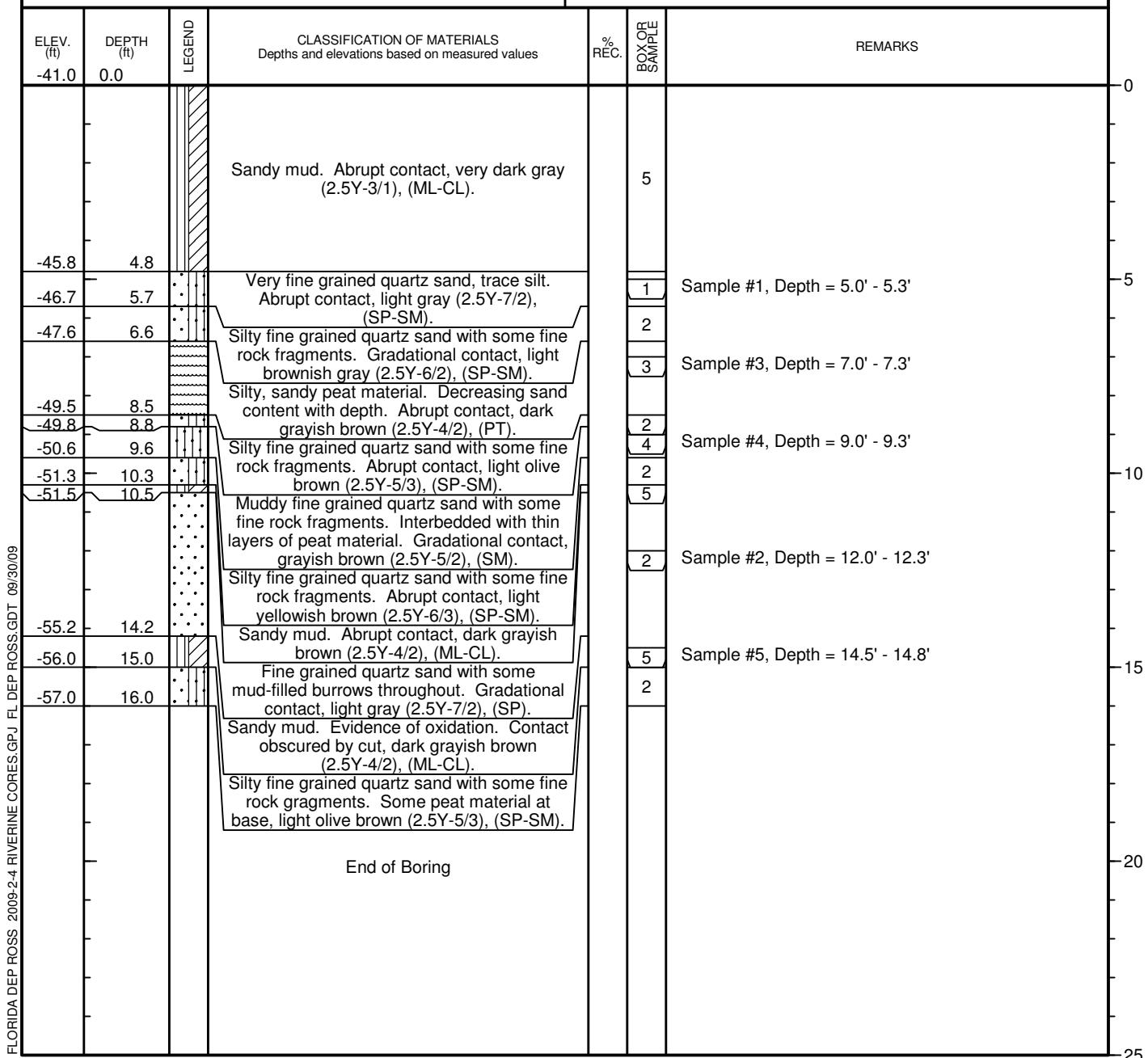
Boring Designation MRE_08-11

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT			
				10. COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)		HORIZONTAL	VERTICAL
						NAD 1983	NAVD 88
2. BORING DESIGNATION MRE_08-11		LOCATION COORDINATES X = 29.344 Y = 89.495		11. MANUFACTURER'S DESIGNATION OF DRILL		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES		DISTURBED	UNDISTURBED (UD)
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER			
6. THICKNESS OF OVERBURDEN		0.0 Ft.		15. DATE BORING		STARTED 12-18-08	COMPLETED 12-18-08
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING		-46.0 Ft.	
8. TOTAL DEPTH OF BORING		18.9 Ft.		17. TOTAL RECOVERY FOR BORING		17 Ft.	
				18. SIGNATURE AND TITLE OF INSPECTOR			



Boring Designation MRE_08-13

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS
1. PROJECT Riverine Sand Mining				9. SIZE AND TYPE OF BIT		
				10. COORDINATE SYSTEM/DATUM Geographic (Latitude/Longitude)NAD 1983		HORIZONTAL VERTICAL NAVD 88
2. BORING DESIGNATION MRE_08-13		LOCATION COORDINATES X = 29.347 Y = 89.502		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
3. DRILLING AGENCY		CONTRACTOR FILE NO.		12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)		
4. NAME OF DRILLER Alpine				13. TOTAL NUMBER CORE BOXES		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER		
6. THICKNESS OF OVERTBURDEN		0.0 Ft.		15. DATE BORING STARTED 12-18-08		COMPLETED 12-18-08
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING -41.0 Ft.		
8. TOTAL DEPTH OF BORING		18.9 Ft.		17. TOTAL RECOVERY FOR BORING 16 Ft.		
				18. SIGNATURE AND TITLE OF INSPECTOR		



ANNEX C3

VIBRACORE PHOTOGRAPHS

Vibracore: MRB_08-01 (page 1 of 3)



Vibracore MRB_08-01 (page 2 of 3)



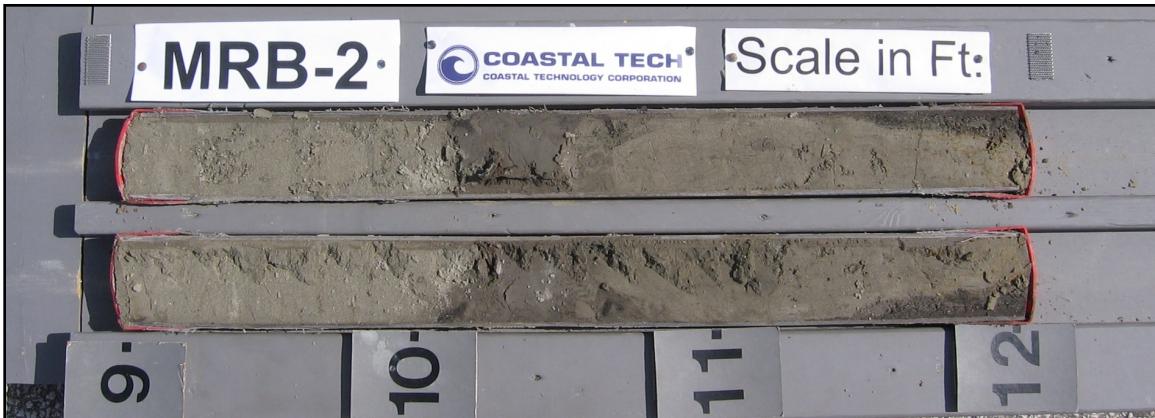
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Vibracore MRB_08-02 (page 1 of 3)



Vibracore MRB_08-02 (page 2 of 3)



Vibracore MRB_08-02 (page 3 of 3)



Vibracore MRB_08-05 (page 1 of 3)



Vibracore MRB_08-05 (page 2 of 3)



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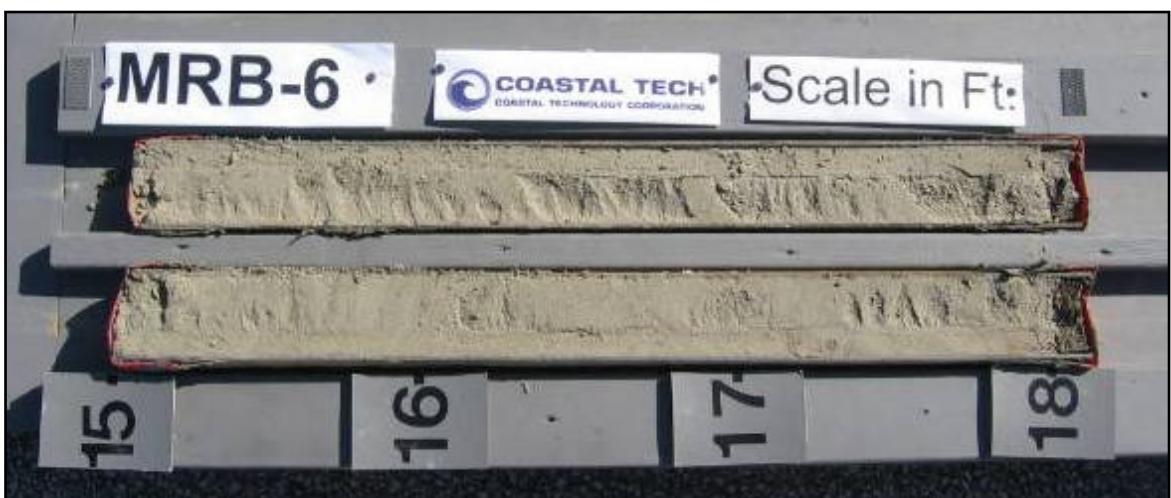
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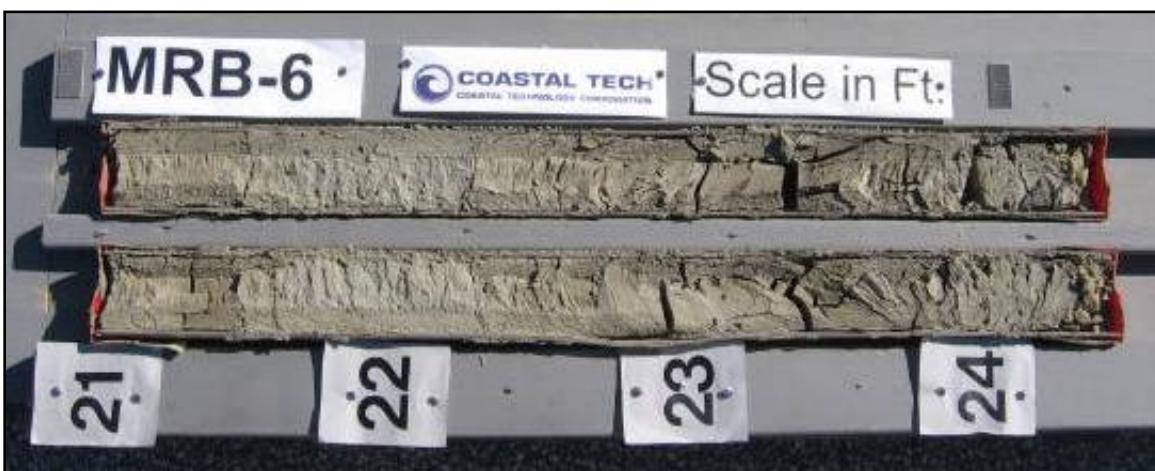
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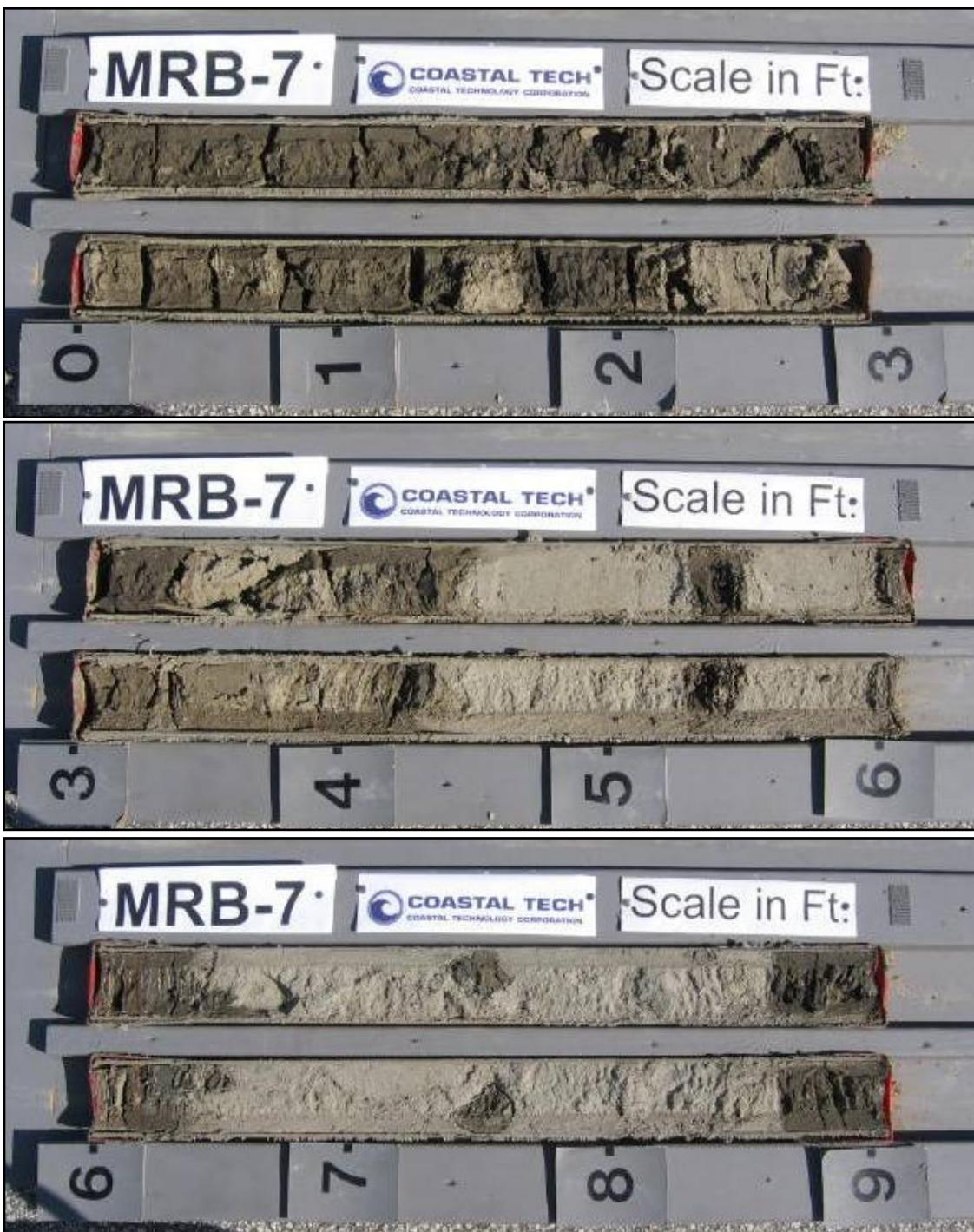
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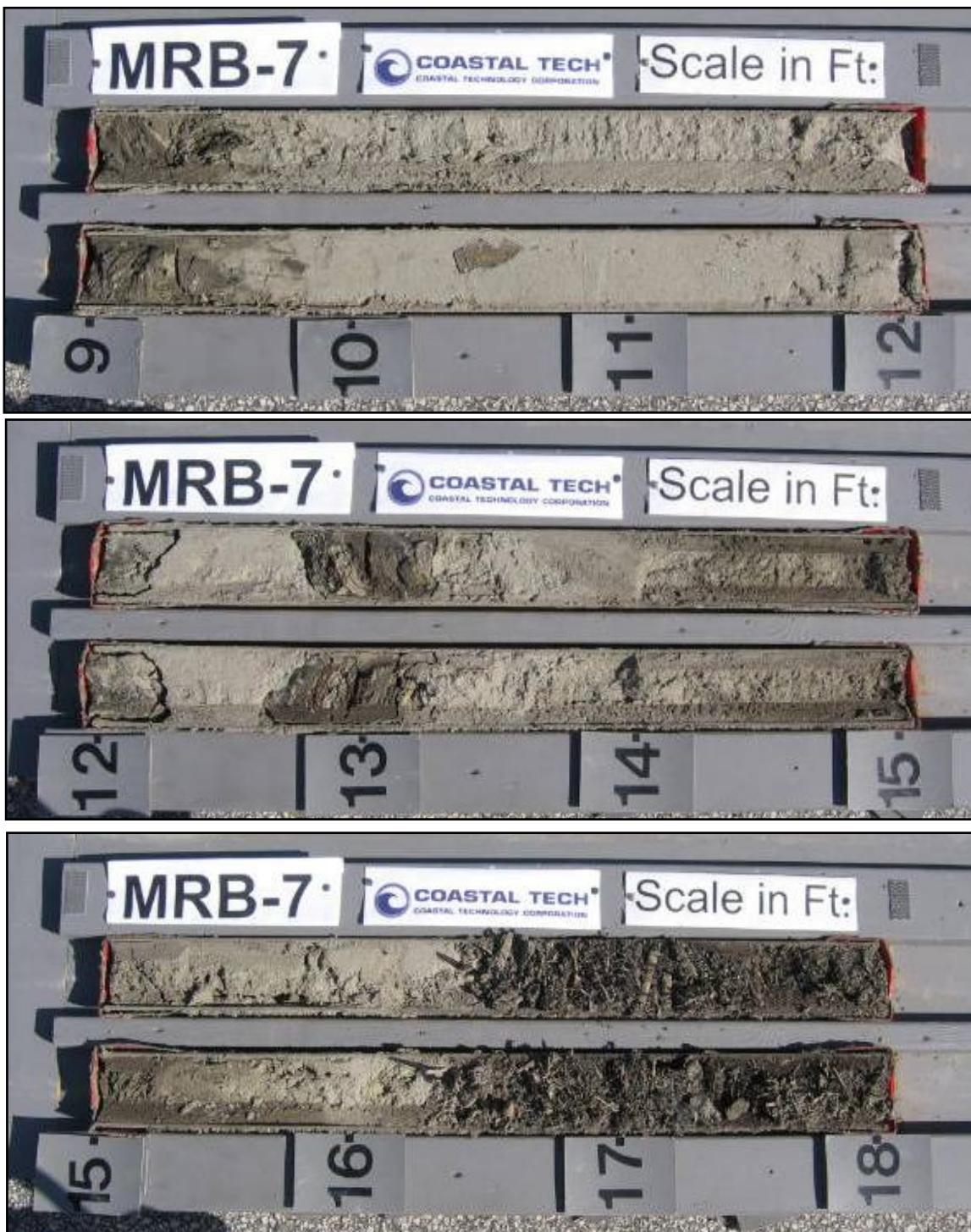
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Vibracore MRB_08-07 (page 1 of 3)



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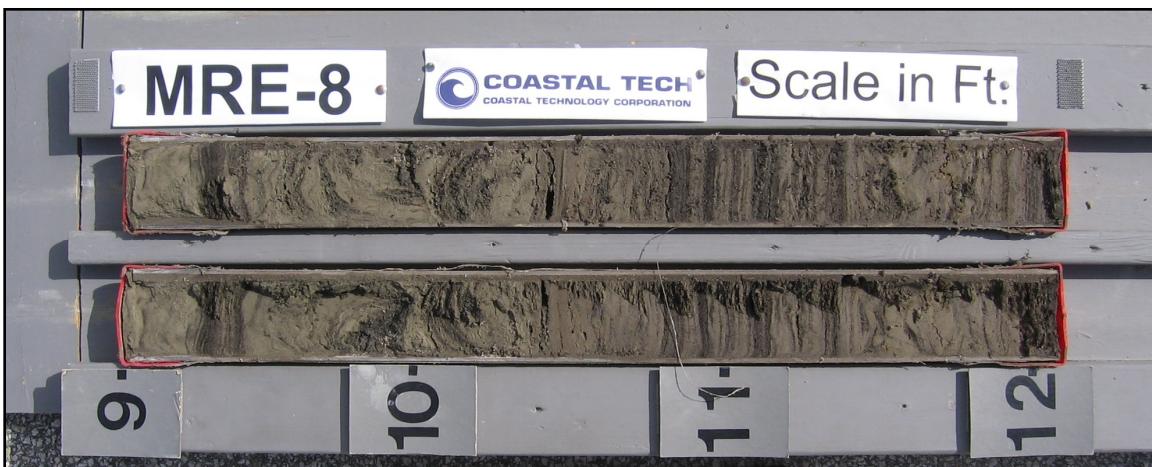
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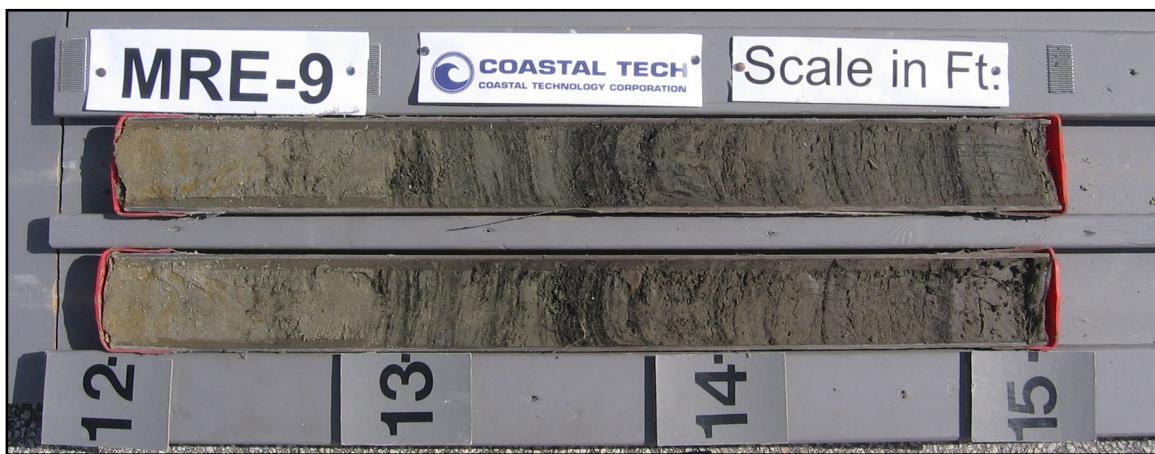
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Vibracore MRE_08-09 (page 1 of 2)



Vibracore MRE_08-09 (page 2 of 2)



Vibracore MRE_08-10 (page 1 of 2)



Vibracore MRE_08-10 (page 2 of 2)



Vibracore MRE_08-11 (page 1 of 2)



Vibracore MRE_08-11 (page 2 of 2)



Vibracore MRE_08-13 (page 1 of 2)



Vibracore MRE_08-13 (page 2 of 2)



ANNEX C4

SEDIMENTOLOGIC SUMMARY TABLE

STANDARD SAMPLES

Sedimentologic Summary
Standard Samples

Vibracore	Sample Interval	Sample No.	gINT Granularmetrics							USC	
			Size Class (wt%)				Descriptive Statistics				
			Gravel	Sand	<#200	<#230	Mean (mm*)	Verbal	Std. Dev.(phi)		
MRB-08-01	16.0-16.3	3	0.00	99.25	0.75	0.52	0.21	F	0.55	SP	
	23.0-23.3	4	0.00	83.21	16.79	16.47	0.23	F	0.41	SM	
MRB-08-02	2.0-2.3	2	0.00	99.34	0.66	0.60	0.23	F	0.39	SP	
	7.0-7.3	4	0.00	70.35	29.65	21.12	0.10	F	0.38	SM	
MRB-08-07	7.0-7.3	2	0.00	84.78	15.22	12.36	0.19	F	0.62	SM	

*Mean grain size refers to coarse fraction only (>#200 sieve)

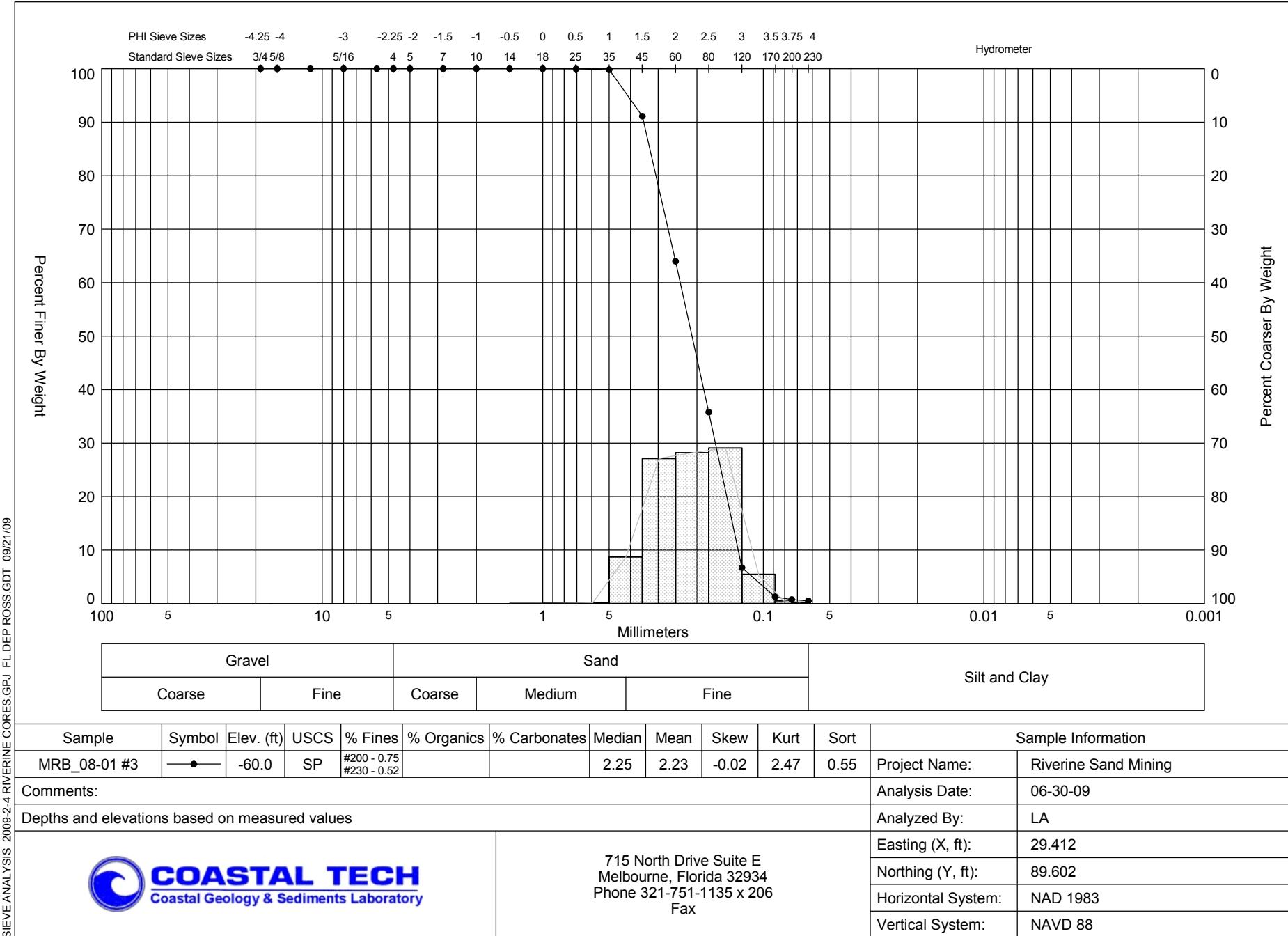
Vibracore	Sample Interval	Sample No.	gINT Granularmetrics							USC	
			Size Class (wt%)				Descriptive Statistics				
			Gravel	Sand	<#200	<#230	Mean (mm*)	Verbal	Std. Dev.(phi)		
MRE-08-05	24.0-24.3	2	0.09	87.60	12.31	10.07	0.15	F	0.69	SM	
	26.0-26.3	4	0.00	88.46	11.54	8.31	0.15	F	0.63	SP-SM	
MRE-08-08	0.5-0.8	1	0.00	76.07	23.93	23.41	0.22	F	0.44	SM	
	23.0-23.3	3	0.00	97.51	2.49	1.94	0.20	F	0.45	SP	
MRE-08-09	6.0-6.3	2	0.00	95.19	4.81	4.21	0.19	F	0.51	SP	
	9.0-9.3	3	0.00	76.88	23.12	15.67	0.11	F	0.54	SM	
	11.0-11.3	4	0.00	94.23	5.77	4.41	0.13	F	0.41	SP-SM	
MRE-08-11	0.5-0.8	1	0.00	75.59	24.41	22.06	0.15	F	0.54	SM	
	16.0-16.3	2	0.00	87.58	12.42	8.32	0.12	F	0.40	SM	
MRE-08-13	5.0-5.3	1	0.00	88.27	11.73	10.45	0.13	F	0.40	SP-SM	
	7.0-7.3	3	0.00	68.94	31.06	23.71	0.11	F	0.52	SM	
	9.0-9.3	4	0.00	68.70	31.30	22.76	0.10	F	0.47	SM	
	12.0-12.3	2	0.00	96.67	3.33	2.90	0.23	F	0.46	SP	

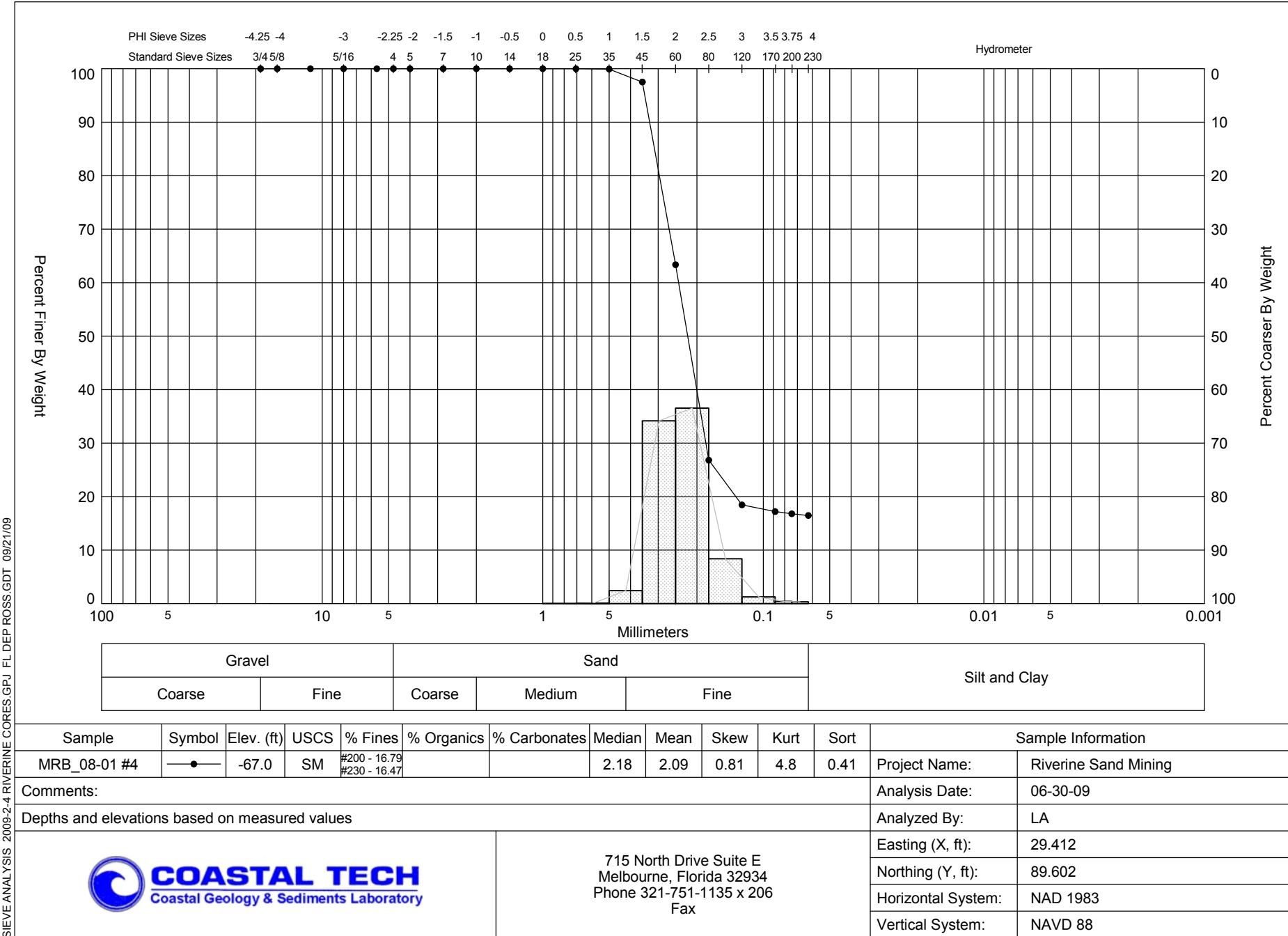
*Mean grain size refers to coarse fraction only (>#200 sieve)

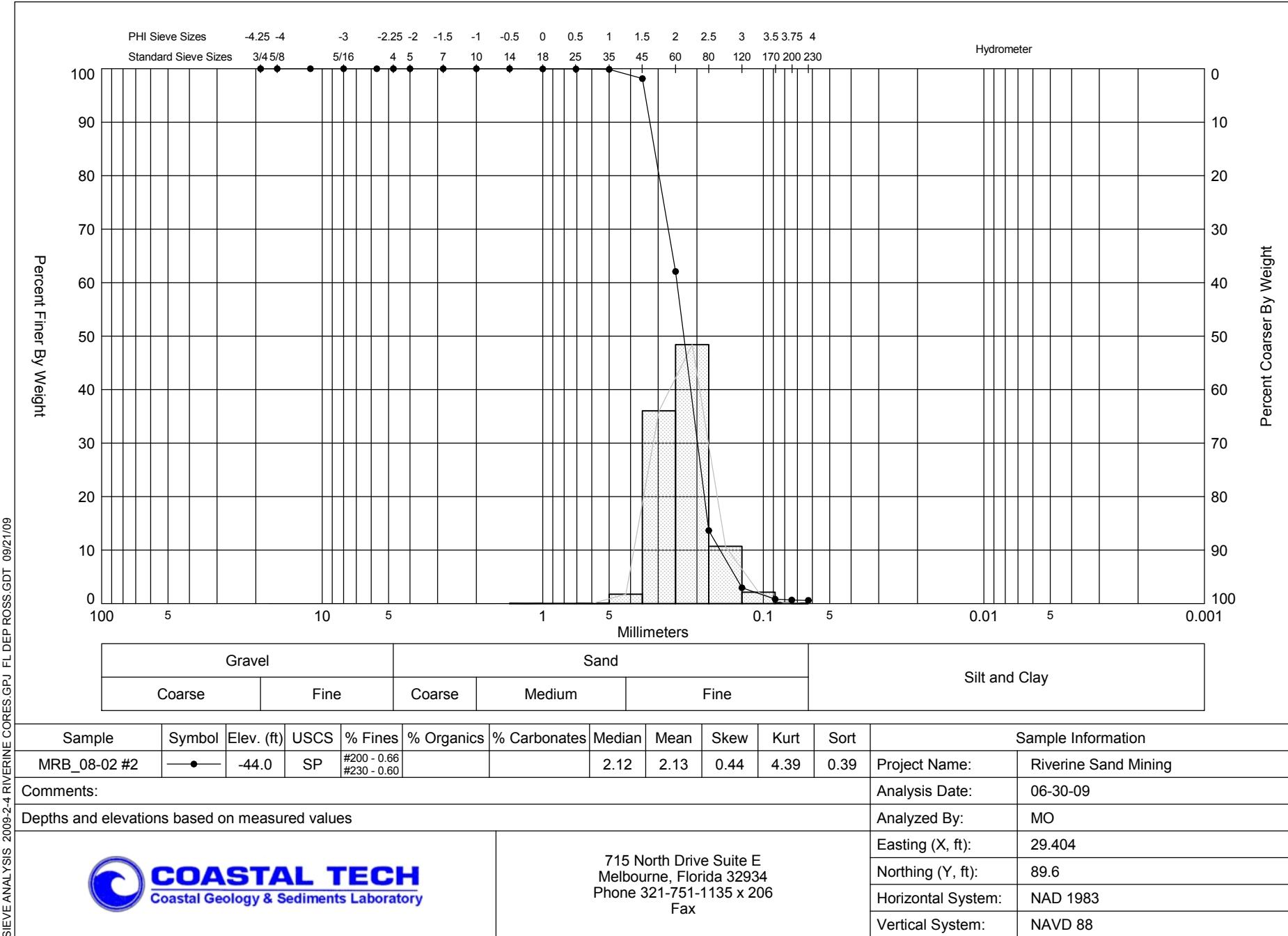
ANNEX C5

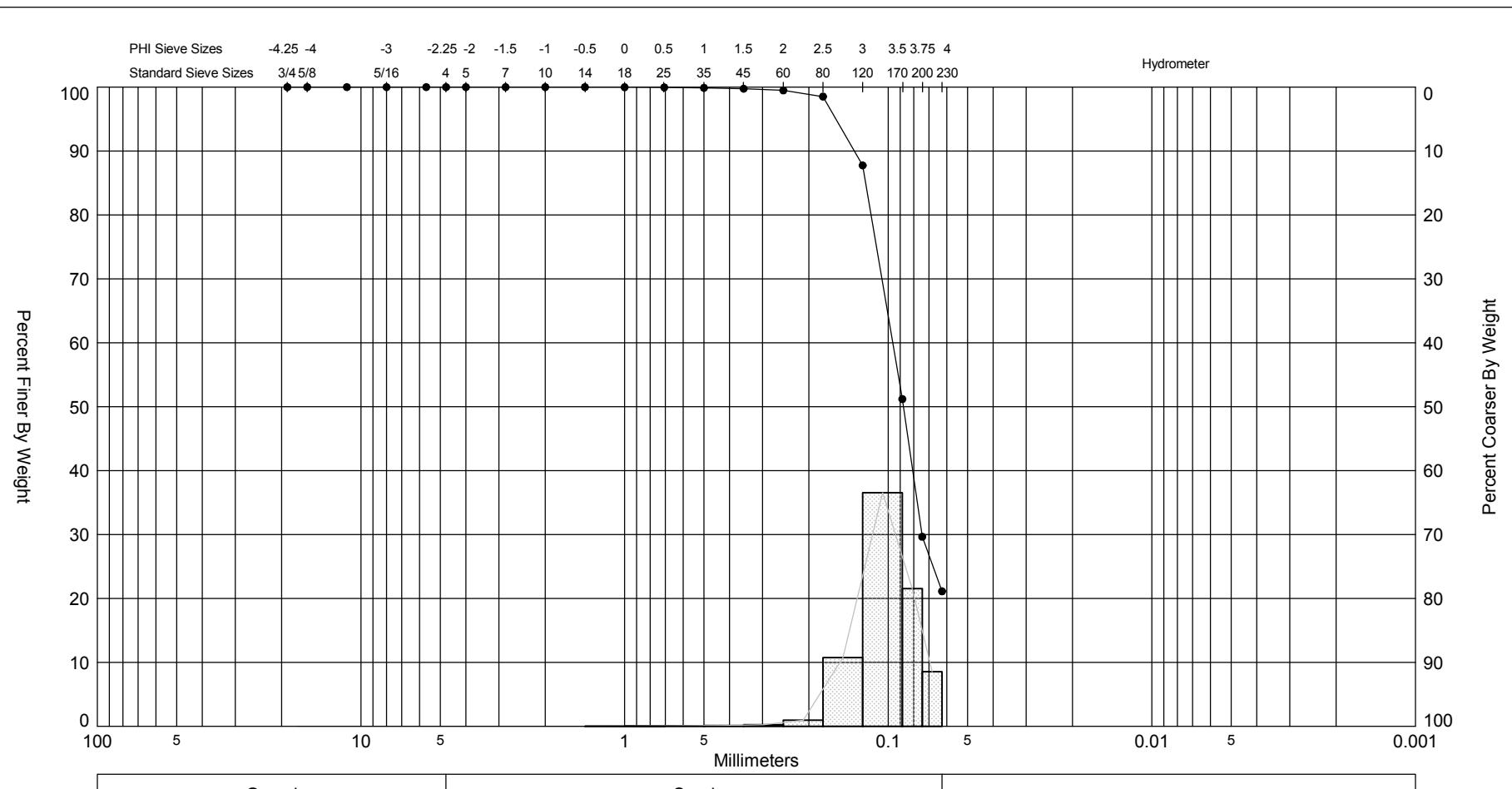
GRANULARMETRIC CURVES

STANDARD SAMPLES

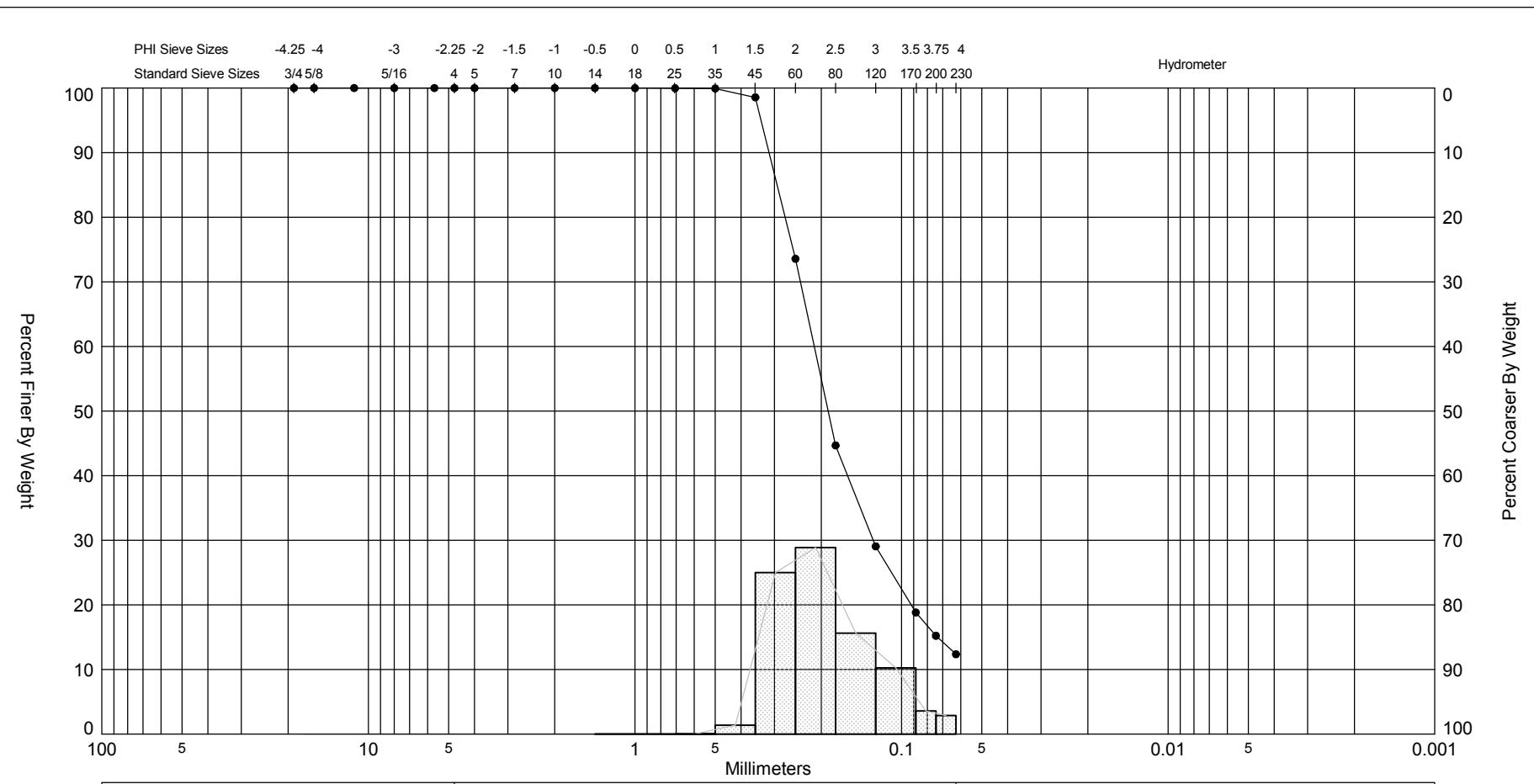




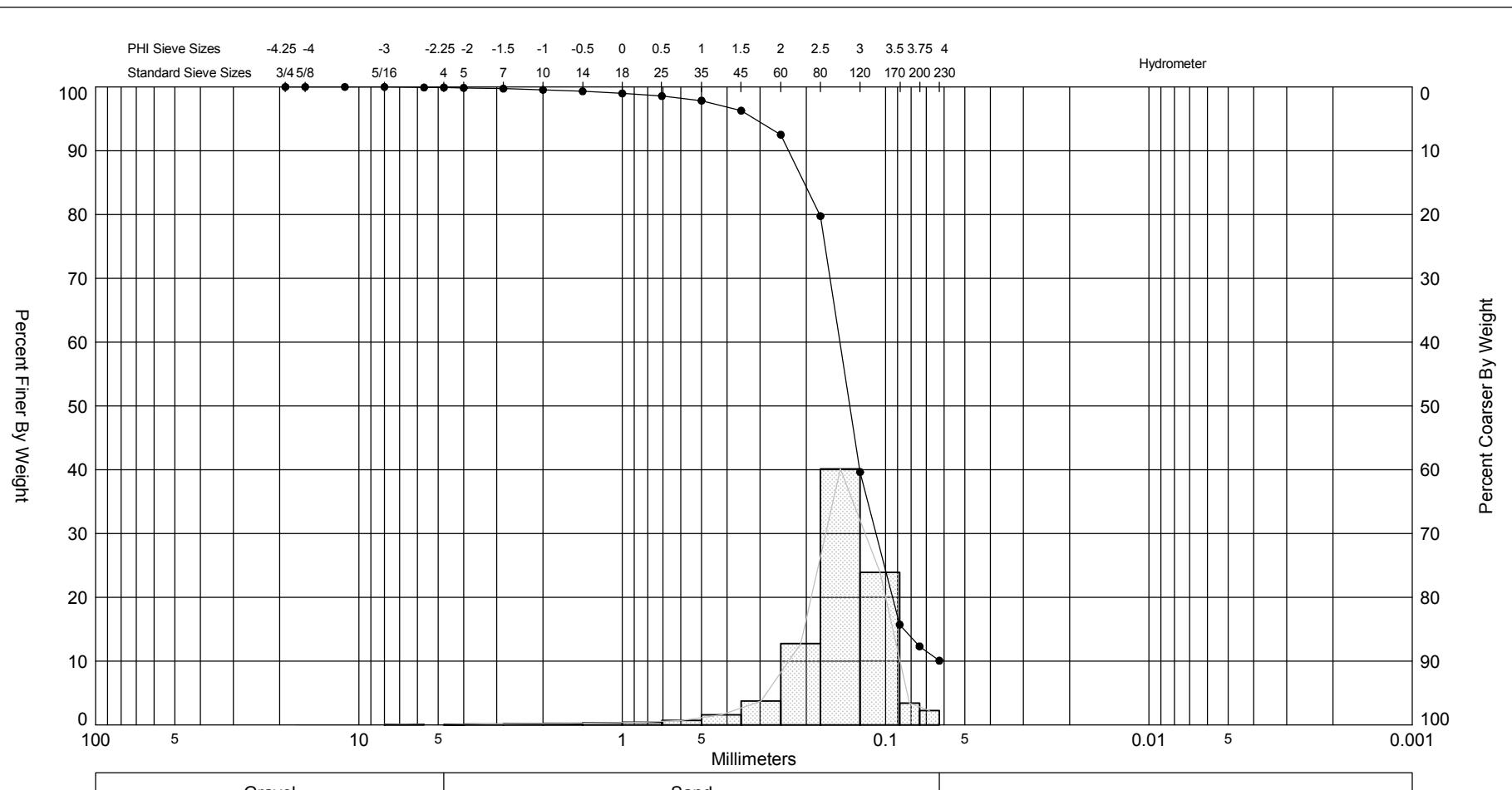




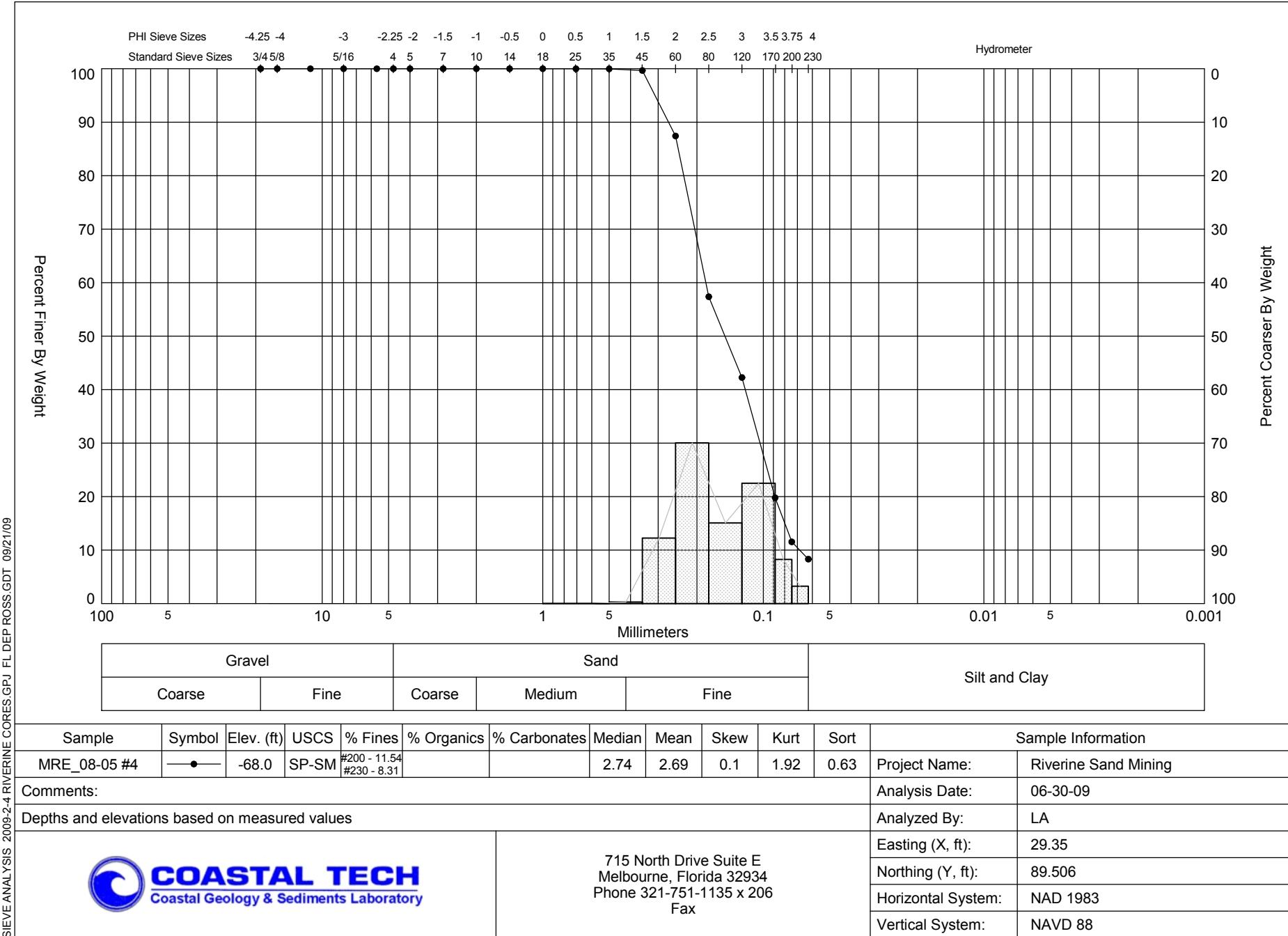
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRB_08-02 #4	●	-49.0	SM	#200 - 29.65 #230 - 21.12			3.51	3.33	-1.45	9.52	0.38	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.404 Northing (Y, ft): 89.6 Horizontal System: NAD 1983 Vertical System: NAVD 88				

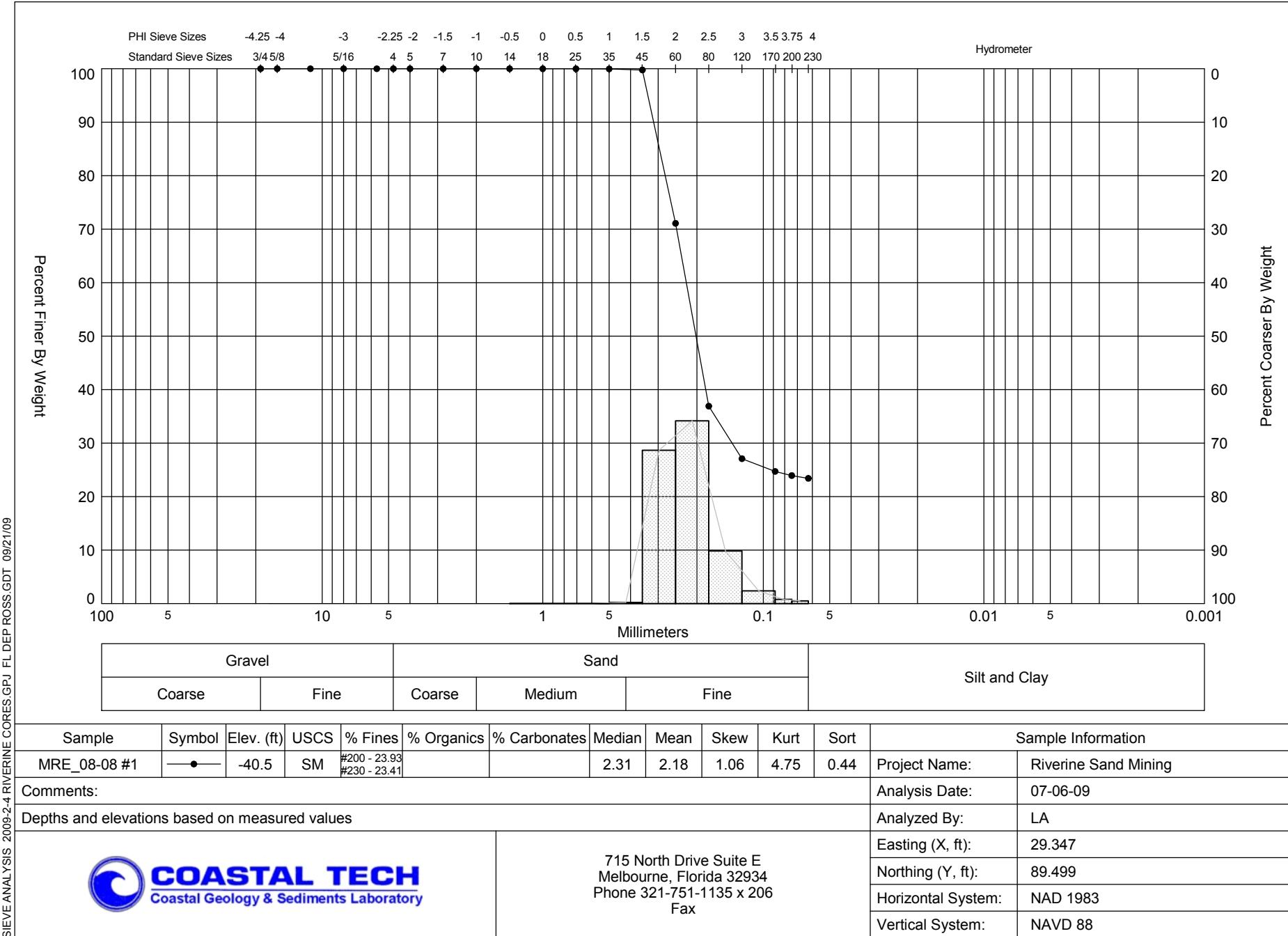


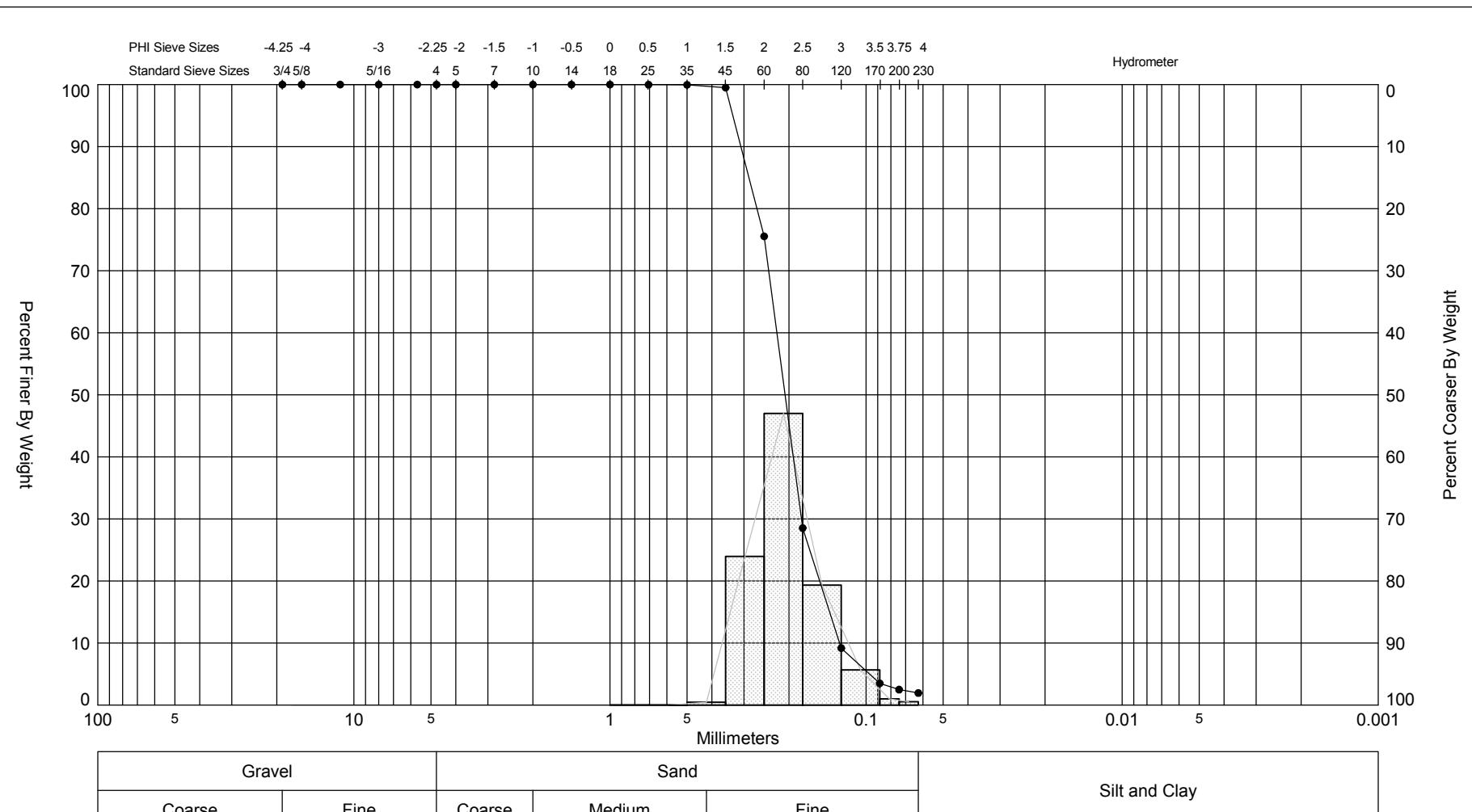
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRB_08-07 #2	●	-49.0	SM	#200 - 15.22 #230 - 12.36			2.41	2.41	0.59	2.62	0.62	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.409 Northing (Y, ft): 89.602 Horizontal System: NAD 1983 Vertical System: NAVD 88				



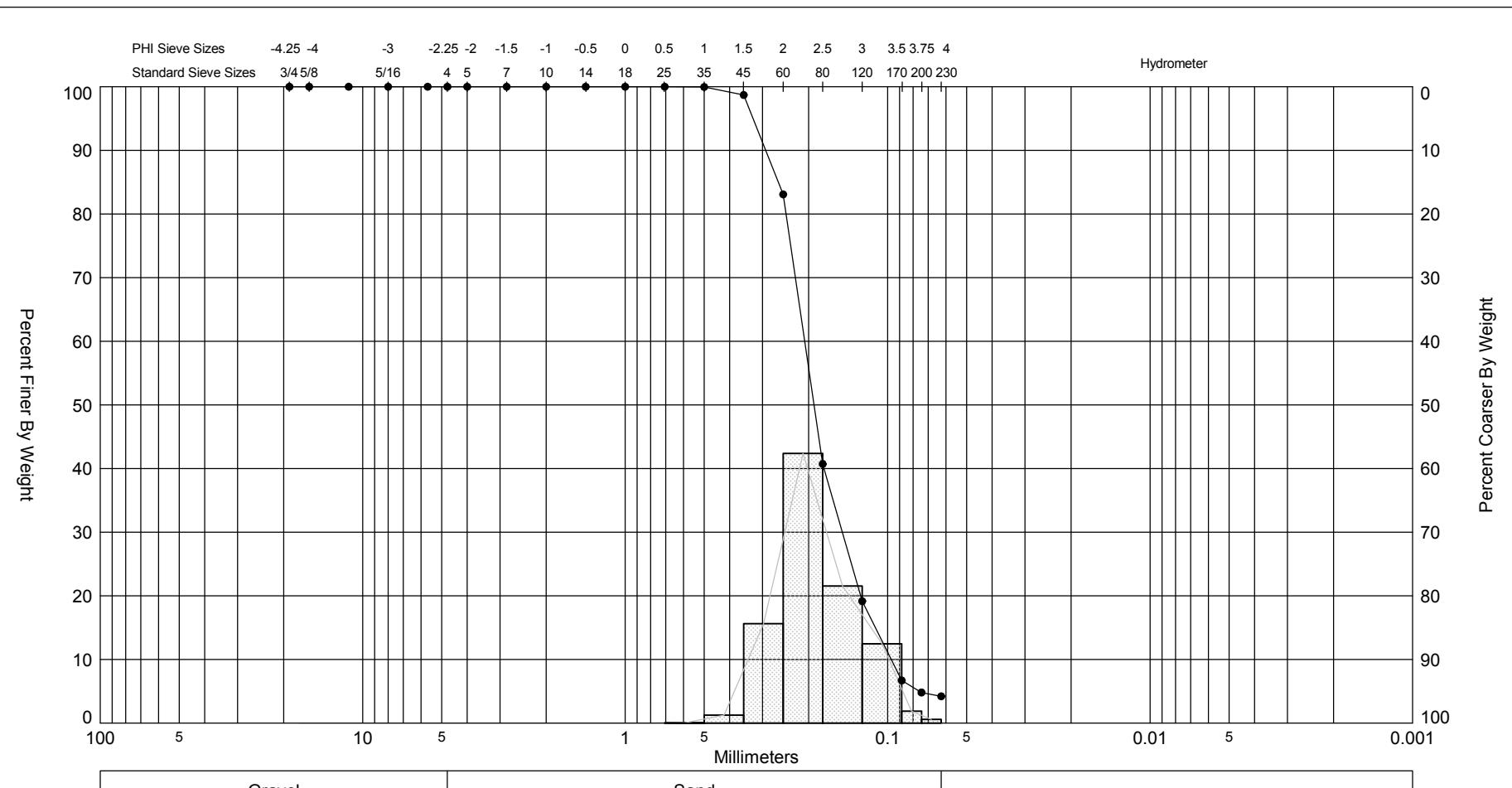
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-05 #2	●	-66.0	SM	#200 - 12.31 #230 - 10.07			2.87	2.74	-2.57	15.53	0.69	Project Name:			
Comments: Gravel content is organic											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.35 Northing (Y, ft): 89.506 Horizontal System: NAD 1983 Vertical System: NAVD 88				



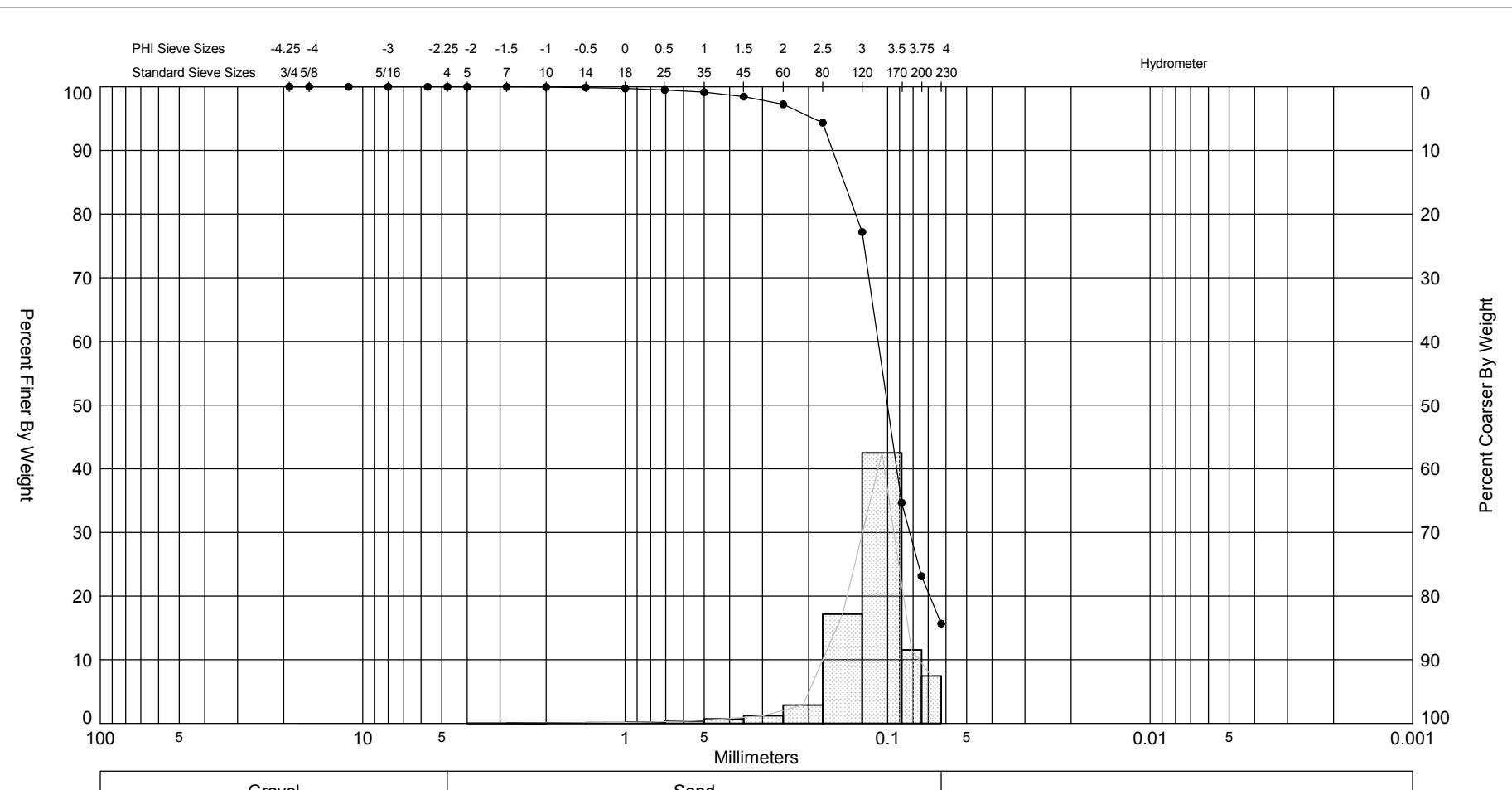




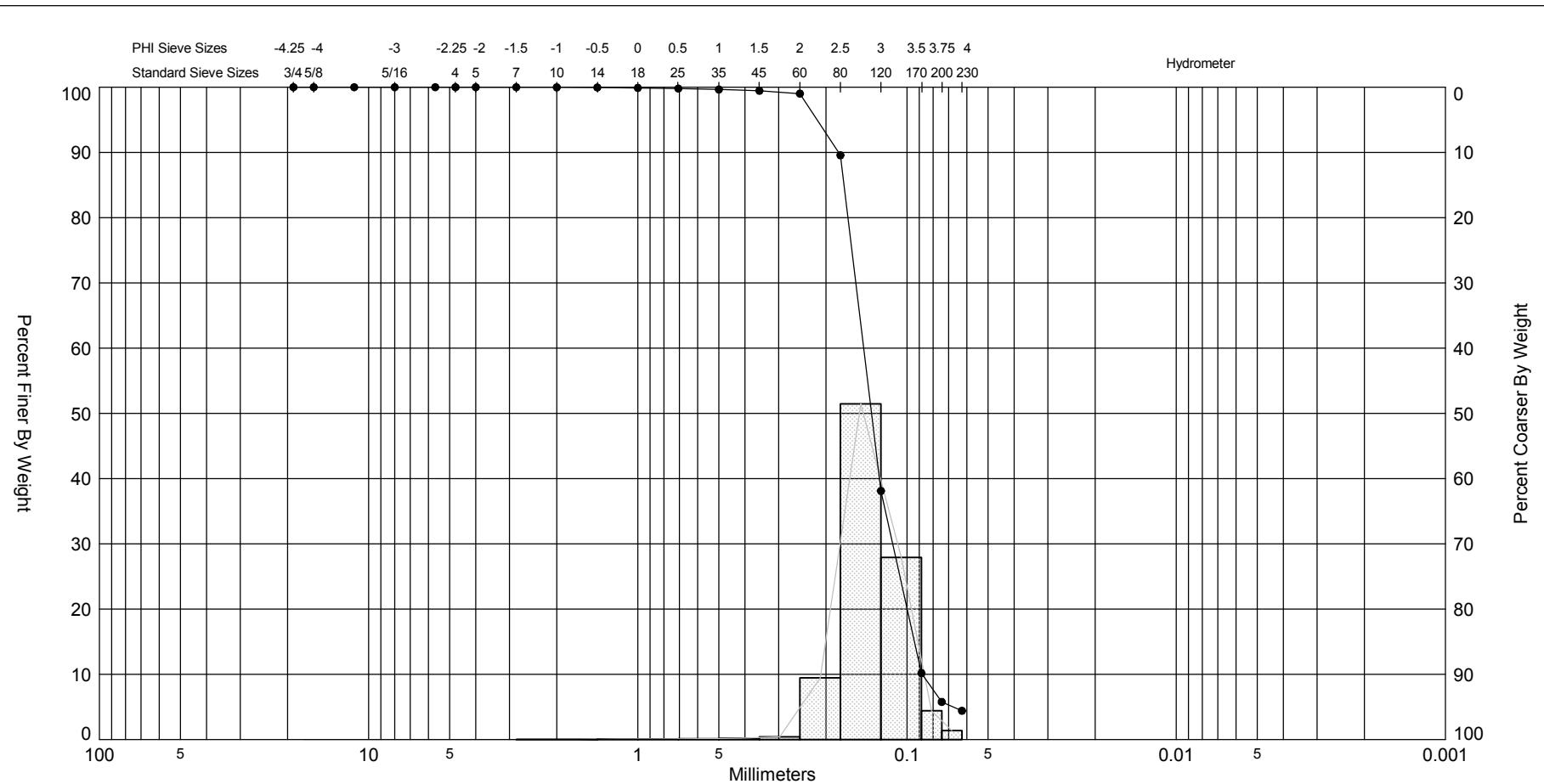
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-08 #3	●	-63.0	SP	#200 - 2.49 #230 - 1.94			2.27	2.3	0.68	3.63	0.45	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.347 Northing (Y, ft): 89.499 Horizontal System: NAD 1983 Vertical System: NAVD 88				



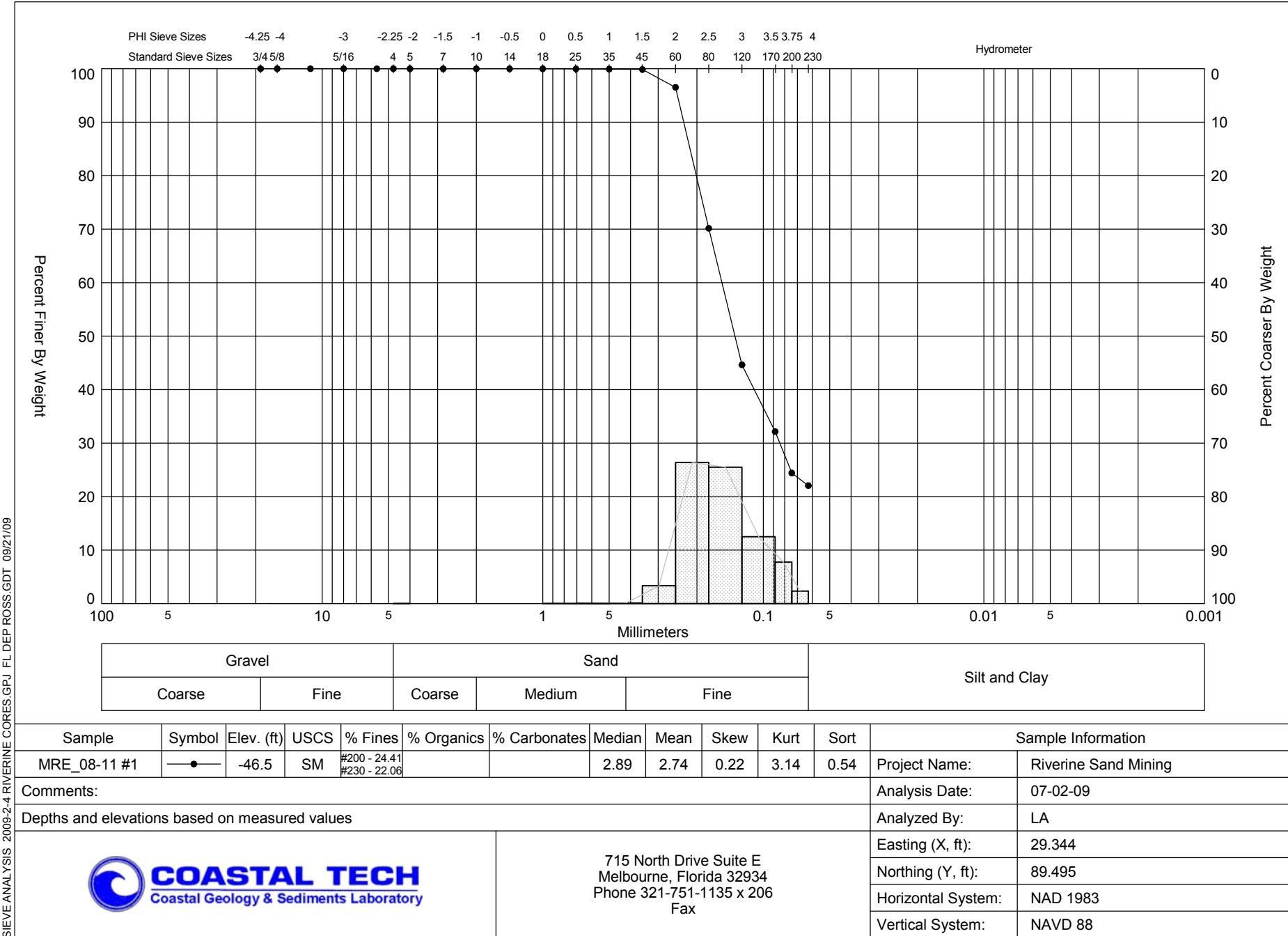
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRE_08-09 #2	●	-44.0	SP	#200 - 4.81 #230 - 4.21			2.39	2.43	0.38	2.82	0.51	Project Name:	
Comments:											Analysis Date:	07-06-09	
Depths and elevations based on measured values											Analyzed By:	LA	
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft):	29.351	
715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax											Northing (Y, ft):	89.509	
											Horizontal System:	NAD 1983	
											Vertical System:	NAVD 88	

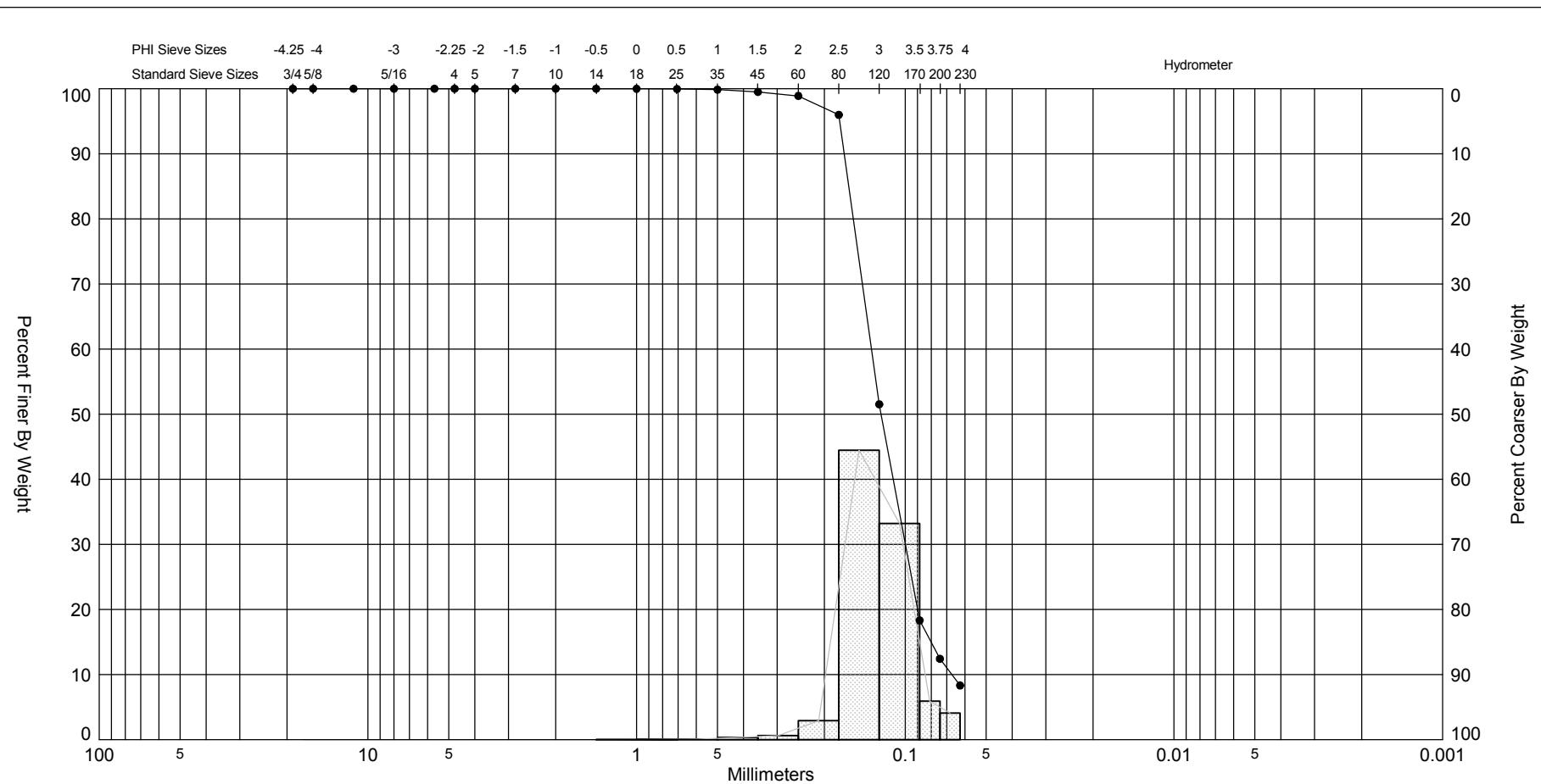


Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-09 #3	●	-47.0	SM	#200 - 23.12 #230 - 15.67			3.32	3.15	-2.41	14.27	0.54	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.351 Northing (Y, ft): 89.509 Horizontal System: NAD 1983 Vertical System: NAVD 88				

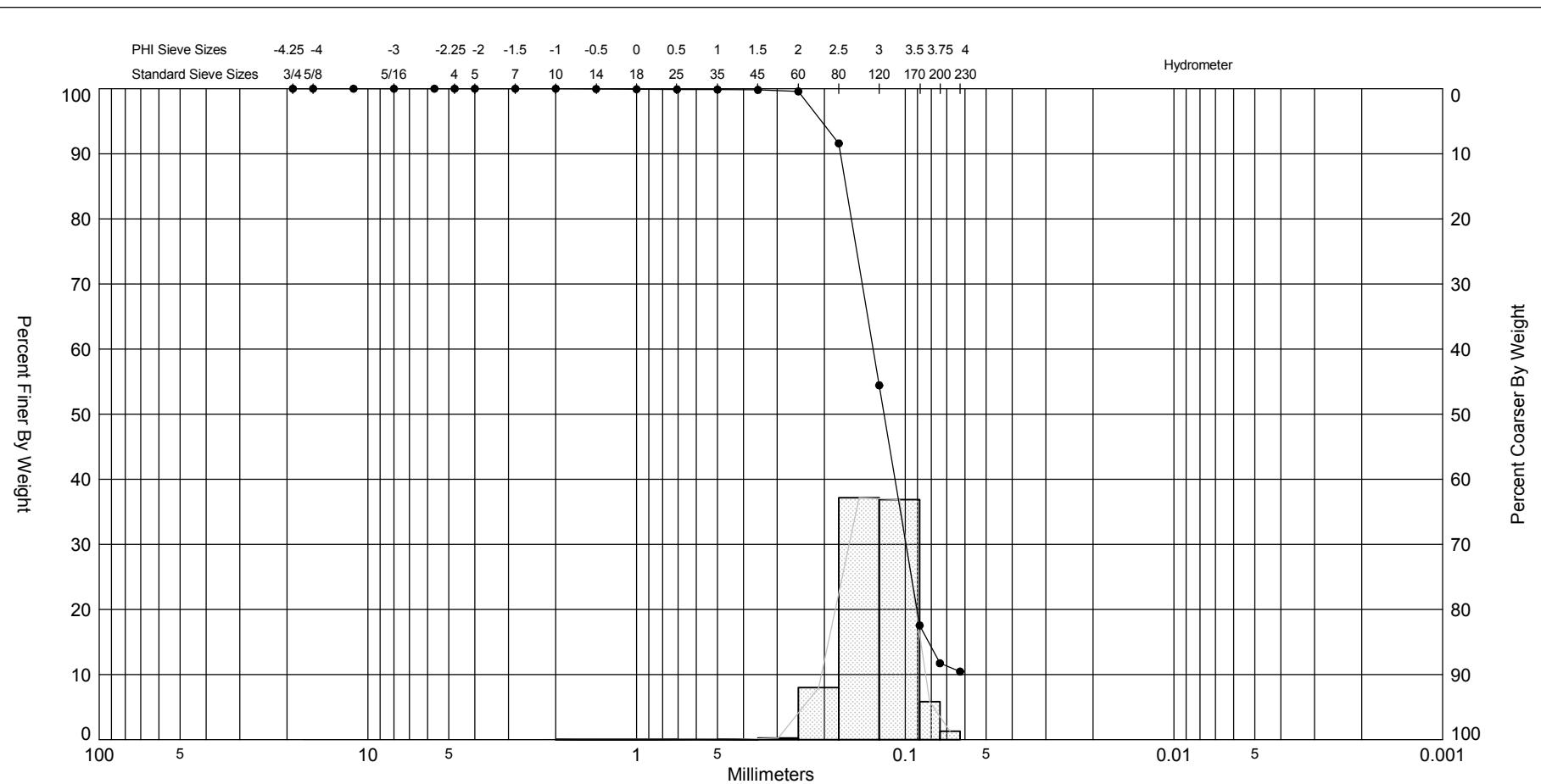


Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-09 #4	●	-49.0	SP-SM	#200 - 5.77 #230 - 4.41			2.88	2.89	-1.16	11.78	0.41	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.351 Northing (Y, ft): 89.509 Horizontal System: NAD 1983 Vertical System: NAVD 88				





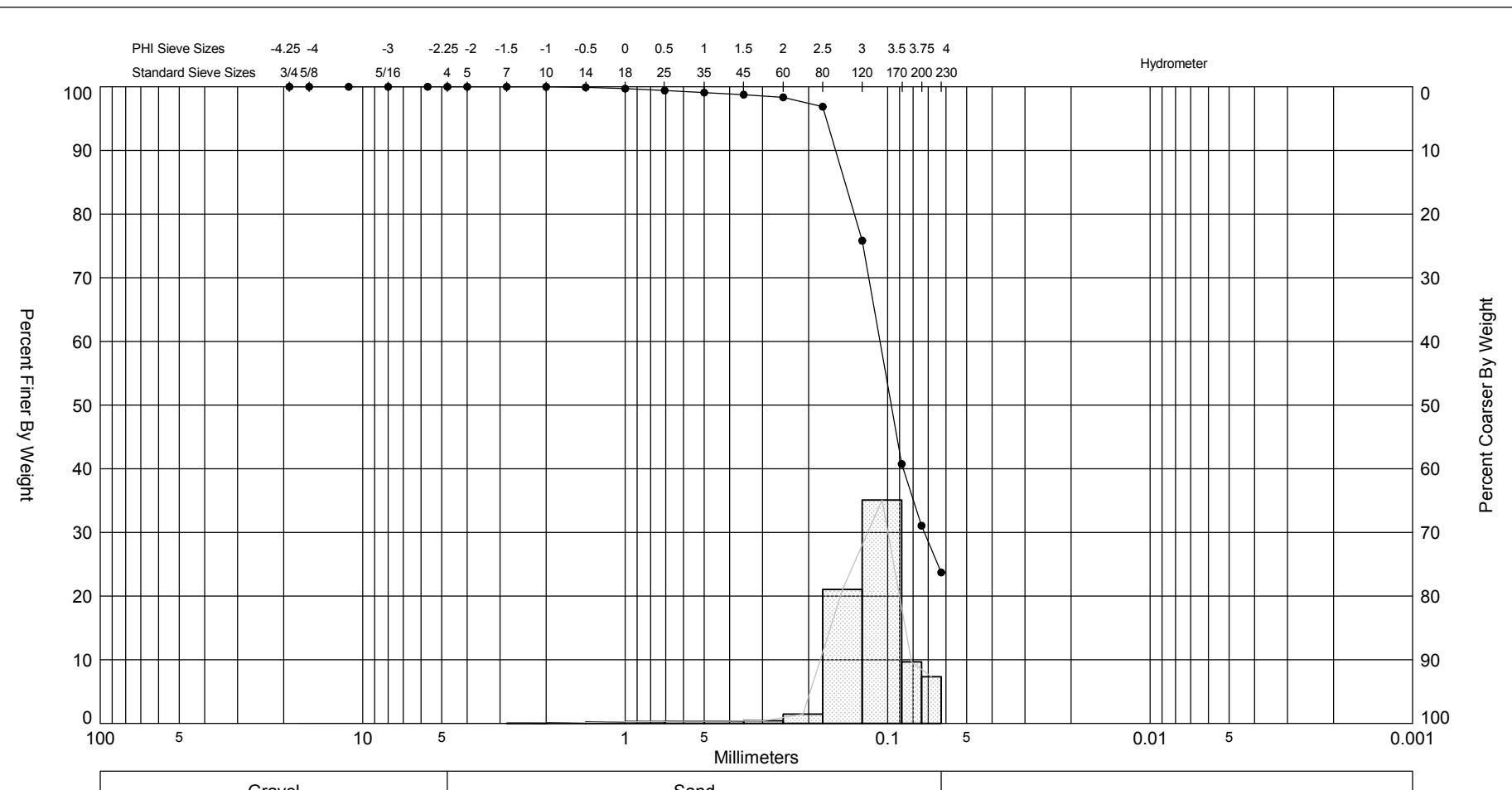
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-11 #2	●	-62.0	SM	#200 - 12.42 #230 - 8.32			3.02	3.01	-0.44	6.11	0.4	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.344 Northing (Y, ft): 89.495 Horizontal System: NAD 1983 Vertical System: NAVD 88				



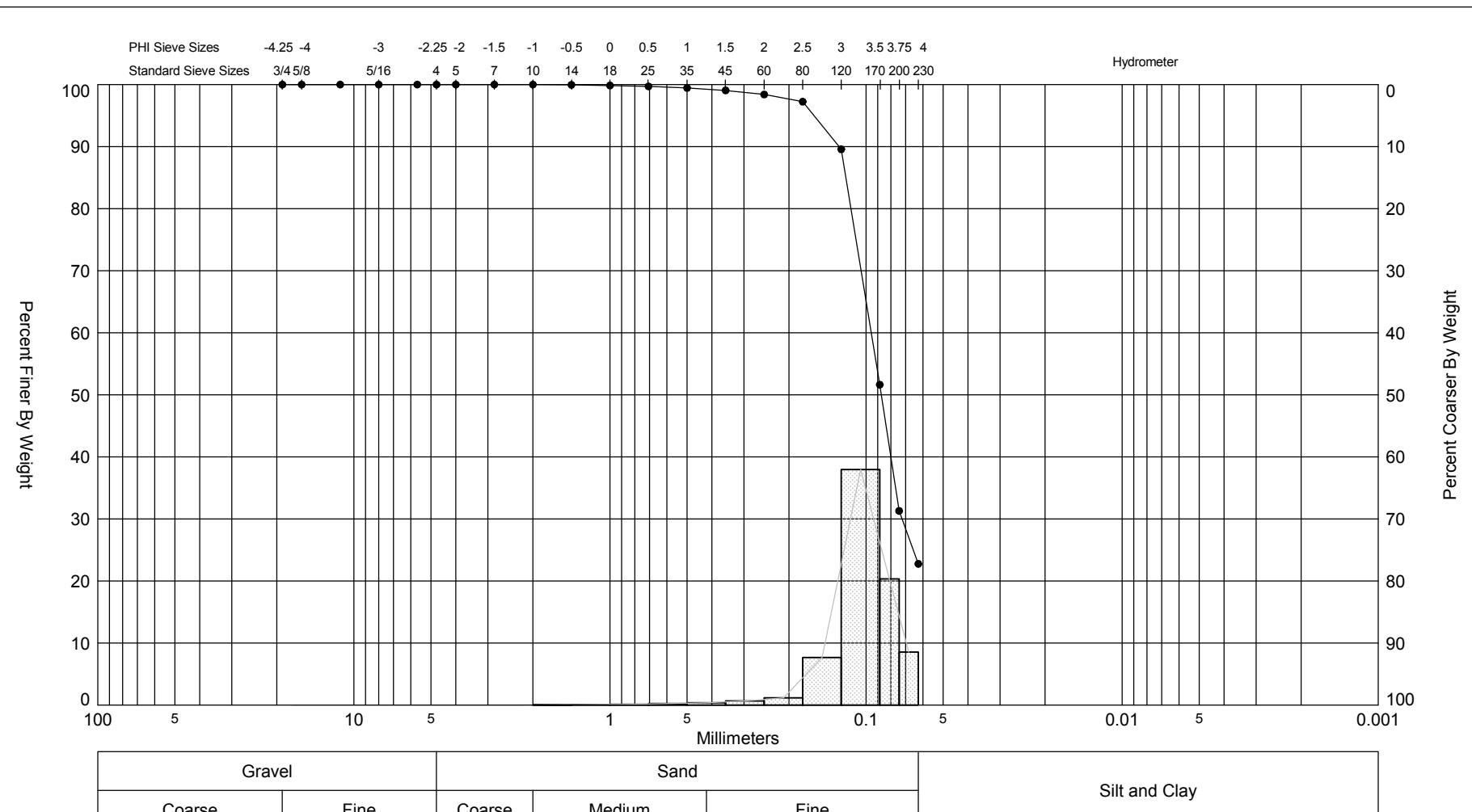
Percent Finer By Weight

Percent Coarser By Weight

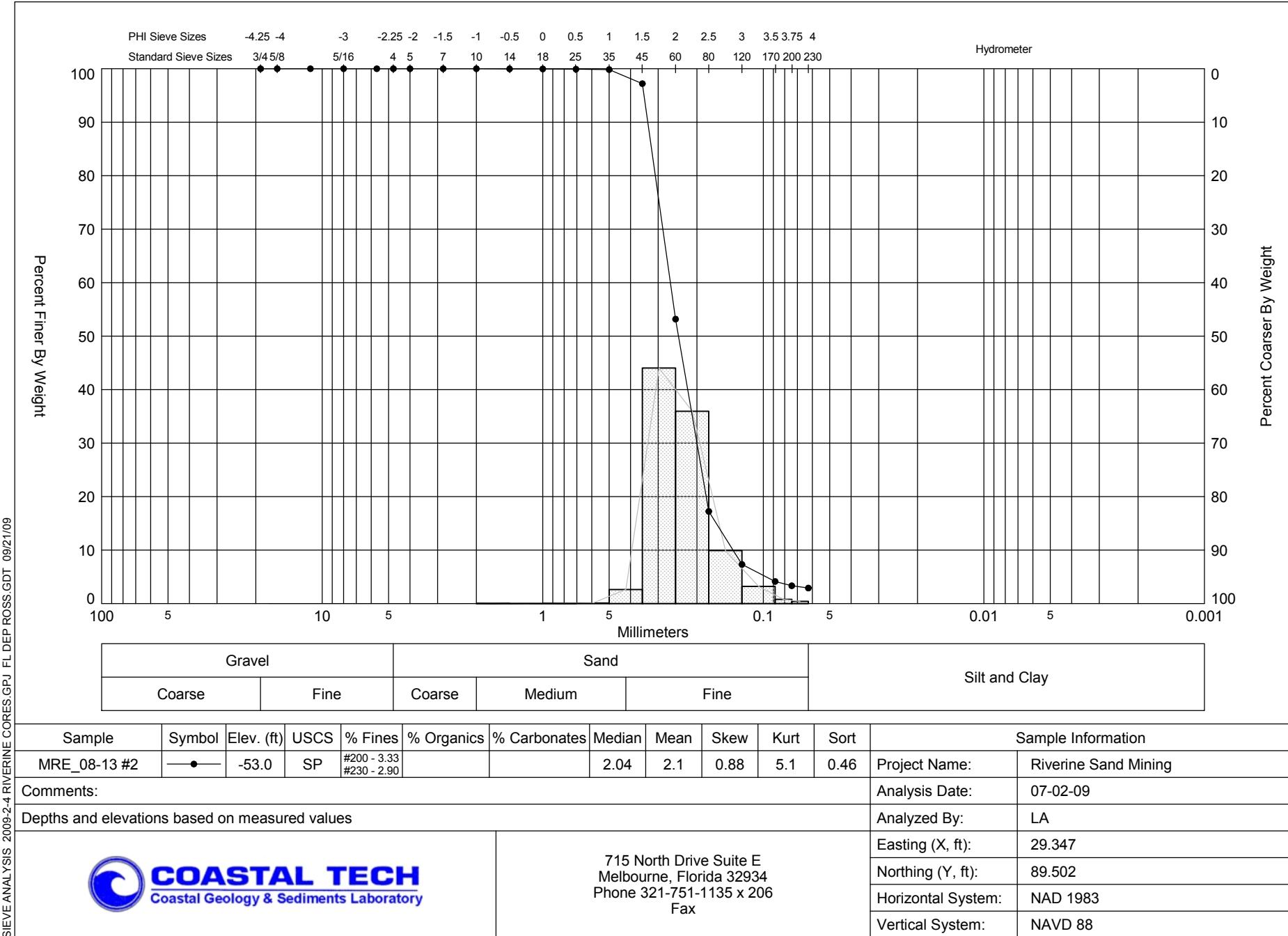
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRE_08-13 #1	●	-46.0	SP-SM	#200 - 11.73 #230 - 10.45			3.06	2.98	-0.89	8.64	0.4	Project Name:	
Comments:												Analysis Date:	
Depths and elevations based on measured values												Analyzed By:	
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	29.347
715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax												Northing (Y, ft):	89.502
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88



Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-13 #3	●	-48.0	SM	#200 - 31.06 #230 - 23.71			3.37	3.15	-2.42	15.41	0.52	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.347 Northing (Y, ft): 89.502 Horizontal System: NAD 1983 Vertical System: NAVD 88				



Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-13 #4	●	-50.0	SM	#200 - 31.30 #230 - 22.76			3.52	3.31	-2.85	17.99	0.47	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.347 Northing (Y, ft): 89.502 Horizontal System: NAD 1983 Vertical System: NAVD 88				



ANNEX C6

GRANULARMETRIC TABLES

STANDARD SAMPLES

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-01 #3							
Analysis Date: 06-30-09							
Analyzed By: LA							
Easting (ft): 29.412	Northing (ft): 89.602	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -60.0 NAVD 88		
USCS: SP	Munsell:	Comments:					
Dry Weight (g): 114.58	Wash Weight (g): 114.58	Pan Retained (g): 0.41	Sieve Loss (%): 0.17	Fines (%): #200 - 0.75 #230 - 0.52	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.01	0.01	0.01	
25	0.50	0.71	0.05	0.04	0.06	0.05	
35	1.00	0.50	0.15	0.13	0.21	0.18	
45	1.50	0.35	9.96	8.69	10.17	8.87	
60	2.00	0.25	31.08	27.13	41.25	36.00	
80	2.50	0.18	32.32	28.21	73.57	64.21	
120	3.00	0.13	33.32	29.08	106.89	93.29	
170	3.50	0.09	6.26	5.46	113.15	98.75	
200	3.75	0.07	0.57	0.50	113.72	99.25	
230	4.00	0.06	0.26	0.23	113.98	99.48	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.16	2.84	2.69	2.25	1.80	1.63	1.28	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.23	0.21	0.55	-0.02	2.47		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-01 #4							
Analysis Date: 06-30-09							
Analyzed By: LA							
Easting (ft): 29.412	Northing (ft): 89.602	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -67.0 NAVD 88		
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 113.74	Wash Weight (g): 95.27	Pan Retained (g): 0.10	Sieve Loss (%): 0.15	Fines (%): #200 - 16.79 #230 - 16.47	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.02	0.02	0.02	0.02	
35	1.00	0.50	0.06	0.05	0.08	0.07	
45	1.50	0.35	2.74	2.41	2.82	2.48	
60	2.00	0.25	38.85	34.16	41.67	36.64	
80	2.50	0.18	41.56	36.54	83.23	73.18	
120	3.00	0.13	9.52	8.37	92.75	81.55	
170	3.50	0.09	1.42	1.25	94.17	82.80	
200	3.75	0.07	0.47	0.41	94.64	83.21	
230	4.00	0.06	0.36	0.32	95.00	83.53	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		2.61	2.18	1.83	1.70	1.54	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.09	0.23	0.41	0.81	4.8		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-02 #2							
Analysis Date: 06-30-09							
Analyzed By: MO							
Easting (ft): 29.404	Northing (ft): 89.6	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -44.0 NAVD 88		
USCS: SP	Munsell:	Comments:					
Dry Weight (g): 124.50	Wash Weight (g): 124.50	Pan Retained (g): 0.63	Sieve Loss (%): 0.10	Fines (%): #200 - 0.66 #230 - 0.60	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.05	0.04	0.05	0.04	
25	0.50	0.71	0.03	0.02	0.08	0.06	
35	1.00	0.50	0.08	0.06	0.16	0.12	
45	1.50	0.35	2.15	1.73	2.31	1.85	
60	2.00	0.25	44.89	36.06	47.20	37.91	
80	2.50	0.18	60.29	48.43	107.49	86.34	
120	3.00	0.13	13.32	10.70	120.81	97.04	
170	3.50	0.09	2.65	2.13	123.46	99.17	
200	3.75	0.07	0.21	0.17	123.67	99.34	
230	4.00	0.06	0.07	0.06	123.74	99.40	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
2.90	2.48	2.38	2.12	1.82	1.70	1.54	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.13	0.23	0.39	0.44	4.39		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-02 #4							
Analysis Date: 06-30-09							
Analyzed By: LA							
Easting (ft): 29.404	Northing (ft): 89.6	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -49.0 NAVD 88		
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 108.20	Wash Weight (g): 91.62	Pan Retained (g): 5.99	Sieve Loss (%): 0.26	Fines (%): #200 - 29.65 #230 - 21.12	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.02	0.02	0.02	0.02	
25	0.50	0.71	0.03	0.03	0.05	0.05	
35	1.00	0.50	0.08	0.07	0.13	0.12	
45	1.50	0.35	0.14	0.13	0.27	0.25	
60	2.00	0.25	0.29	0.27	0.56	0.52	
80	2.50	0.18	1.04	0.96	1.60	1.48	
120	3.00	0.13	11.65	10.77	13.25	12.25	
170	3.50	0.09	39.56	36.56	52.81	48.81	
200	3.75	0.07	23.31	21.54	76.12	70.35	
230	4.00	0.06	9.23	8.53	85.35	78.88	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		3.89	3.51	3.17	3.05	2.66	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.33	0.10	0.38	-1.45	9.52		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-07 #2							
Analysis Date: 06-30-09							
Analyzed By: LA							
Easting (ft): 29.409	Northing (ft): 89.602	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -49.0 NAVD 88		
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 129.54	Wash Weight (g): 115.68	Pan Retained (g): 1.86	Sieve Loss (%): 0.23	Fines (%): #200 - 15.22 #230 - 12.36	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.01	0.01	0.01	
25	0.50	0.71	0.03	0.02	0.04	0.03	
35	1.00	0.50	0.05	0.04	0.09	0.07	
45	1.50	0.35	1.77	1.37	1.86	1.44	
60	2.00	0.25	32.37	24.99	34.23	26.43	
80	2.50	0.18	37.42	28.89	71.65	55.32	
120	3.00	0.13	20.24	15.62	91.89	70.94	
170	3.50	0.09	13.26	10.24	105.15	81.18	
200	3.75	0.07	4.66	3.60	109.81	84.78	
230	4.00	0.06	3.71	2.86	113.52	87.64	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.70	3.20	2.41	1.97	1.79	1.57	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.41	0.19	0.62	0.59	2.62		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-05 #2							
Analysis Date: 06-30-09							
Analyzed By: LA							
Easting (ft): 29.35	Northing (ft): 89.506	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -66.0 NAVD 88		
USCS: SM	Munsell:	Comments: Gravel content is organic					
Dry Weight (g): 124.29	Wash Weight (g): 113.03	Pan Retained (g): 1.27	Sieve Loss (%): 0.01	Fines (%): #200 - 12.31 #230 - 10.07	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.11	0.09	0.11	0.09	
4	-2.25	4.76	0.00	0.00	0.11	0.09	
5	-2.00	4.00	0.07	0.06	0.18	0.15	
7	-1.50	2.83	0.14	0.11	0.32	0.26	
10	-1.00	2.00	0.24	0.19	0.56	0.45	
14	-0.50	1.41	0.28	0.23	0.84	0.68	
18	0.00	1.00	0.42	0.34	1.26	1.02	
25	0.50	0.71	0.51	0.41	1.77	1.43	
35	1.00	0.50	0.89	0.72	2.66	2.15	
45	1.50	0.35	1.95	1.57	4.61	3.72	
60	2.00	0.25	4.68	3.77	9.29	7.49	
80	2.50	0.18	15.86	12.76	25.15	20.25	
120	3.00	0.13	49.85	40.11	75.00	60.36	
170	3.50	0.09	29.73	23.92	104.73	84.28	
200	3.75	0.07	4.24	3.41	108.97	87.69	
230	4.00	0.06	2.78	2.24	111.75	89.93	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.49	3.31	2.87	2.56	2.33	1.67	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.74	0.15	0.69	-2.57	15.53		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-05 #4							
Analysis Date: 06-30-09							
Analyzed By: LA							
Easting (ft): 29.35	Northing (ft): 89.506	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -68.0 NAVD 88		
USCS: SP-SM	Munsell:	Comments:					
Dry Weight (g): 128.04	Wash Weight (g): 120.19	Pan Retained (g): 2.52	Sieve Loss (%): 0.22	Fines (%): #200 - 11.54 #230 - 8.31	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.02	0.02	0.02	0.02	
35	1.00	0.50	0.01	0.01	0.03	0.03	
45	1.50	0.35	0.38	0.30	0.41	0.33	
60	2.00	0.25	15.69	12.25	16.10	12.58	
80	2.50	0.18	38.47	30.05	54.57	42.63	
120	3.00	0.13	19.33	15.10	73.90	57.73	
170	3.50	0.09	28.80	22.49	102.70	80.22	
200	3.75	0.07	10.55	8.24	113.25	88.46	
230	4.00	0.06	4.14	3.23	117.39	91.69	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.61	3.38	2.74	2.21	2.06	1.69	
Moment	Mean Phi		Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.69		0.15	0.63	0.1	1.92	

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-08 #1							
Analysis Date: 07-06-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.499	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -40.5 NAVD 88				
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 88.49	Wash Weight (g): 68.38	Pan Retained (g): 0.49	Sieve Loss (%): 0.11	Fines (%): #200 - 23.93 #230 - 23.41	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.01	0.01	0.01	
25	0.50	0.71	0.01	0.01	0.02	0.02	
35	1.00	0.50	0.02	0.02	0.04	0.04	
45	1.50	0.35	0.17	0.19	0.21	0.23	
60	2.00	0.25	25.38	28.68	25.59	28.91	
80	2.50	0.18	30.25	34.18	55.84	63.09	
120	3.00	0.13	8.69	9.82	64.53	72.91	
170	3.50	0.09	2.11	2.38	66.64	75.29	
200	3.75	0.07	0.69	0.78	67.33	76.07	
230	4.00	0.06	0.46	0.52	67.79	76.59	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		3.44	2.31	1.93	1.77	1.58	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.18	0.22	0.44	1.06	4.75		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-08 #3							
Analysis Date: 07-06-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.499	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -63.0 NAVD 88		
USCS: SP	Munsell:	Comments:					
Dry Weight (g): 99.85	Wash Weight (g): 98.10	Pan Retained (g): 0.18	Sieve Loss (%): 0.01	Fines (%): #200 - 2.49 #230 - 1.94	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.02	0.02	0.02	0.02	
35	1.00	0.50	0.02	0.02	0.04	0.04	
45	1.50	0.35	0.46	0.46	0.50	0.50	
60	2.00	0.25	23.92	23.96	24.42	24.46	
80	2.50	0.18	46.94	47.01	71.36	71.47	
120	3.00	0.13	19.32	19.35	90.68	90.82	
170	3.50	0.09	5.67	5.68	96.35	96.50	
200	3.75	0.07	1.01	1.01	97.36	97.51	
230	4.00	0.06	0.55	0.55	97.91	98.06	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.37	2.82	2.59	2.27	2.01	1.82	1.59	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.3	0.20	0.45	0.68	3.63		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-09 #2							
Analysis Date: 07-06-09							
Analyzed By: LA							
Easting (ft): 29.351	Northing (ft): 89.509	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -44.0 NAVD 88				
USCS: SP	Munsell:	Comments:					
Dry Weight (g): 102.25	Wash Weight (g): 98.35	Pan Retained (g): 0.34	Sieve Loss (%): 0.08	Fines (%): #200 - 4.81 #230 - 4.21	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.00	0.00	0.00	0.00	
35	1.00	0.50	0.04	0.04	0.04	0.04	
45	1.50	0.35	1.29	1.26	1.33	1.30	
60	2.00	0.25	15.97	15.62	17.30	16.92	
80	2.50	0.18	43.31	42.36	60.61	59.28	
120	3.00	0.13	22.04	21.56	82.65	80.84	
170	3.50	0.09	12.74	12.46	95.39	93.30	
200	3.75	0.07	1.93	1.89	97.32	95.19	
230	4.00	0.06	0.61	0.60	97.93	95.79	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.72	3.13	2.86	2.39	2.10	1.97	1.62	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.43	0.19	0.51	0.38	2.82		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-09 #3							
Analysis Date: 07-06-09							
Analyzed By: LA							
Easting (ft): 29.351	Northing (ft): 89.509	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -47.0 NAVD 88		
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 89.96	Wash Weight (g): 78.64	Pan Retained (g): 2.77	Sieve Loss (%): 0.00	Fines (%): #200 - 23.12 #230 - 15.67	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.01	0.01	0.01	0.01	
10	-1.00	2.00	0.03	0.03	0.04	0.04	
14	-0.50	1.41	0.07	0.08	0.11	0.12	
18	0.00	1.00	0.13	0.14	0.24	0.26	
25	0.50	0.71	0.20	0.22	0.44	0.48	
35	1.00	0.50	0.33	0.37	0.77	0.85	
45	1.50	0.35	0.62	0.69	1.39	1.54	
60	2.00	0.25	1.10	1.22	2.49	2.76	
80	2.50	0.18	2.60	2.89	5.09	5.65	
120	3.00	0.13	15.45	17.17	20.54	22.82	
170	3.50	0.09	38.24	42.51	58.78	65.33	
200	3.75	0.07	10.39	11.55	69.17	76.88	
230	4.00	0.06	6.70	7.45	75.87	84.33	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.99	3.71	3.32	3.03	2.80	2.39	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.15	0.11	0.54	-2.41	14.27		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-09 #4							
Analysis Date: 07-06-09							
Analyzed By: LA							
Easting (ft): 29.351	Northing (ft): 89.509	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -49.0 NAVD 88				
USCS: SP-SM	Munsell:	Comments:					
Dry Weight (g): 89.70	Wash Weight (g): 86.36	Pan Retained (g): 0.73	Sieve Loss (%): -0.14	Fines (%): #200 - 5.77 #230 - 4.41	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.02	0.02	0.02	0.02	
14	-0.50	1.41	0.02	0.02	0.04	0.04	
18	0.00	1.00	0.06	0.07	0.10	0.11	
25	0.50	0.71	0.09	0.10	0.19	0.21	
35	1.00	0.50	0.13	0.14	0.32	0.35	
45	1.50	0.35	0.18	0.20	0.50	0.55	
60	2.00	0.25	0.39	0.43	0.89	0.98	
80	2.50	0.18	8.48	9.45	9.37	10.43	
120	3.00	0.13	46.16	51.46	55.53	61.89	
170	3.50	0.09	25.05	27.93	80.58	89.82	
200	3.75	0.07	3.96	4.41	84.54	94.23	
230	4.00	0.06	1.22	1.36	85.76	95.59	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.89	3.40	3.23	2.88	2.64	2.55	2.21	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.89	0.13	0.41	-1.16	11.78		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-11 #1							
Analysis Date: 07-02-09							
Analyzed By: LA							
Easting (ft): 29.344	Northing (ft): 89.495	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -46.5 NAVD 88		
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 120.99	Wash Weight (g): 96.21	Pan Retained (g): 1.81	Sieve Loss (%): 0.10	Fines (%): #200 - 24.41 #230 - 22.06	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.01	0.01	0.01	0.01	
7	-1.50	2.83	0.00	0.00	0.01	0.01	
10	-1.00	2.00	0.00	0.00	0.01	0.01	
14	-0.50	1.41	0.00	0.00	0.01	0.01	
18	0.00	1.00	0.00	0.00	0.01	0.01	
25	0.50	0.71	0.02	0.02	0.03	0.03	
35	1.00	0.50	0.05	0.04	0.08	0.07	
45	1.50	0.35	0.08	0.07	0.16	0.14	
60	2.00	0.25	4.04	3.34	4.20	3.48	
80	2.50	0.18	31.89	26.36	36.09	29.84	
120	3.00	0.13	30.88	25.52	66.97	55.36	
170	3.50	0.09	15.11	12.49	82.08	67.85	
200	3.75	0.07	9.36	7.74	91.44	75.59	
230	4.00	0.06	2.84	2.35	94.28	77.94	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		3.73	2.89	2.41	2.24	2.03	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.74	0.15	0.54	0.22	3.14		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-11 #2							
Analysis Date: 07-02-09							
Analyzed By: LA							
Easting (ft): 29.344	Northing (ft): 89.495	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -62.0 NAVD 88		
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 108.94	Wash Weight (g): 102.71	Pan Retained (g): 2.80	Sieve Loss (%): 0.04	Fines (%): #200 - 12.42 #230 - 8.32	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.01	0.01	0.01	
25	0.50	0.71	0.03	0.03	0.04	0.04	
35	1.00	0.50	0.11	0.10	0.15	0.14	
45	1.50	0.35	0.38	0.35	0.53	0.49	
60	2.00	0.25	0.67	0.62	1.20	1.11	
80	2.50	0.18	3.17	2.91	4.37	4.02	
120	3.00	0.13	48.43	44.46	52.80	48.48	
170	3.50	0.09	36.17	33.20	88.97	81.68	
200	3.75	0.07	6.43	5.90	95.40	87.58	
230	4.00	0.06	4.47	4.10	99.87	91.68	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.60	3.40	3.02	2.74	2.63	2.51	
Moment	Mean Phi		Mean mm	Sorting	Skewness	Kurtosis	
Statistics	3.01		0.12	0.4	-0.44	6.11	

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-13 #1							
Analysis Date: 07-02-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.502	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -46.0 NAVD 88				
USCS: SP-SM	Munsell:	Comments:					
Dry Weight (g): 109.49	Wash Weight (g): 98.98	Pan Retained (g): 0.94	Sieve Loss (%): 0.00	Fines (%): #200 - 11.73 #230 - 10.45	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.05	0.05	0.05	0.05	
18	0.00	1.00	0.03	0.03	0.08	0.08	
25	0.50	0.71	0.03	0.03	0.11	0.11	
35	1.00	0.50	0.02	0.02	0.13	0.13	
45	1.50	0.35	0.06	0.05	0.19	0.18	
60	2.00	0.25	0.25	0.23	0.44	0.41	
80	2.50	0.18	8.75	7.99	9.19	8.40	
120	3.00	0.13	40.70	37.17	49.89	45.57	
170	3.50	0.09	40.38	36.88	90.27	82.45	
200	3.75	0.07	6.37	5.82	96.64	88.27	
230	4.00	0.06	1.40	1.28	98.04	89.55	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.57	3.40	3.06	2.72	2.60	2.29	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.98	0.13	0.4	-0.89	8.64		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-13 #3							
Analysis Date: 07-02-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.502	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -48.0 NAVD 88				
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 111.45	Wash Weight (g): 93.32	Pan Retained (g): 8.29	Sieve Loss (%): 0.00	Fines (%): #200 - 31.06 #230 - 23.71	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.01	0.01	0.01	0.01	
14	-0.50	1.41	0.08	0.07	0.09	0.08	
18	0.00	1.00	0.23	0.21	0.32	0.29	
25	0.50	0.71	0.33	0.30	0.65	0.59	
35	1.00	0.50	0.37	0.33	1.02	0.92	
45	1.50	0.35	0.36	0.32	1.38	1.24	
60	2.00	0.25	0.47	0.42	1.85	1.66	
80	2.50	0.18	1.64	1.47	3.49	3.13	
120	3.00	0.13	23.46	21.05	26.95	24.18	
170	3.50	0.09	39.10	35.08	66.05	59.26	
200	3.75	0.07	10.79	9.68	76.84	68.94	
230	4.00	0.06	8.19	7.35	85.03	76.29	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		3.96	3.37	3.01	2.81	2.54	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.15	0.11	0.52	-2.42	15.41		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-13 #4							
Analysis Date: 07-02-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.502	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -50.0 NAVD 88				
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 106.84	Wash Weight (g): 90.66	Pan Retained (g): 8.14	Sieve Loss (%): 0.00	Fines (%): #200 - 31.30 #230 - 22.76	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.05	0.05	0.05	0.05	
18	0.00	1.00	0.11	0.10	0.16	0.15	
25	0.50	0.71	0.15	0.14	0.31	0.29	
35	1.00	0.50	0.28	0.26	0.59	0.55	
45	1.50	0.35	0.42	0.39	1.01	0.94	
60	2.00	0.25	0.70	0.66	1.71	1.60	
80	2.50	0.18	1.24	1.16	2.95	2.76	
120	3.00	0.13	8.19	7.67	11.14	10.43	
170	3.50	0.09	40.54	37.94	51.68	48.37	
200	3.75	0.07	21.72	20.33	73.40	68.70	
230	4.00	0.06	9.12	8.54	82.52	77.24	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		3.93	3.52	3.19	3.07	2.65	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.31	0.10	0.47	-2.85	17.99		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-13 #2							
Analysis Date: 07-02-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.502	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -53.0 NAVD 88		
USCS: SP	Munsell:	Comments:					
Dry Weight (g): 120.00	Wash Weight (g): 116.71	Pan Retained (g): 0.14	Sieve Loss (%): 0.02	Fines (%): #200 - 3.33 #230 - 2.90	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.04	0.03	0.04	0.03	
18	0.00	1.00	0.03	0.03	0.07	0.05	
25	0.50	0.71	0.05	0.04	0.12	0.09	
35	1.00	0.50	0.08	0.07	0.20	0.16	
45	1.50	0.35	3.16	2.63	3.36	2.79	
60	2.00	0.25	52.84	44.03	56.20	46.82	
80	2.50	0.18	43.14	35.95	99.34	82.77	
120	3.00	0.13	11.89	9.91	111.23	92.68	
170	3.50	0.09	3.83	3.19	115.06	95.87	
200	3.75	0.07	0.96	0.80	116.02	96.67	
230	4.00	0.06	0.52	0.43	116.54	97.10	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.36	2.56	2.39	2.04	1.75	1.65	1.53	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.1	0.23	0.46	0.88	5.1		

ANNEX C7

SEDIMENTOLOGIC SUMMARY TABLES HYDROMETER SAMPLES

Sedimentologic Summary
Hydrometer Samples

Vibracore	Sample Interval	Sample No.	gINT Granularmetrics							USC	
			Size Class (wt%)				Descriptive Statistics				
			Gravel	Sand	<#200	<#230	Mean (mm)*	Verbal	Std. Dev.(phi)		
MRB-08-01	2.0-2.3	1	0.00	6.68	93.32	92.49	0.11	F	0.47	ML-CL	
	19.5-19.8	2	0.00	35.54	64.46	63.87	0.22	F	0.71	ML-CL	
MRB-08-02	0.3-0.6	1	0.00	12.53	87.47	84.46	0.11	F	0.56	ML-CL	
MRB-08-05	3.4-3.7	2	0.00	9.52	90.48	89.64	0.12	F	0.52	ML-CL	
MRB-08-06	1.9-2.2	1	0.00	3.14	96.86	96.70	0.14	F	0.70	ML-CL	
	23.0-23.3	4	0.00	7.17	92.83	91.48	0.11	F	0.61	ML-CL	
MRB-08-07	2.0-2.3	1	0.00	21.77	78.23	77.39	0.13	F	0.40	ML-CL	
	14.0-14.3	4	0.00	38.34	61.66	51.18	0.10	F	0.47	ML-CL	

*Mean grain size refers to coarse fraction only (>#200 sieve)

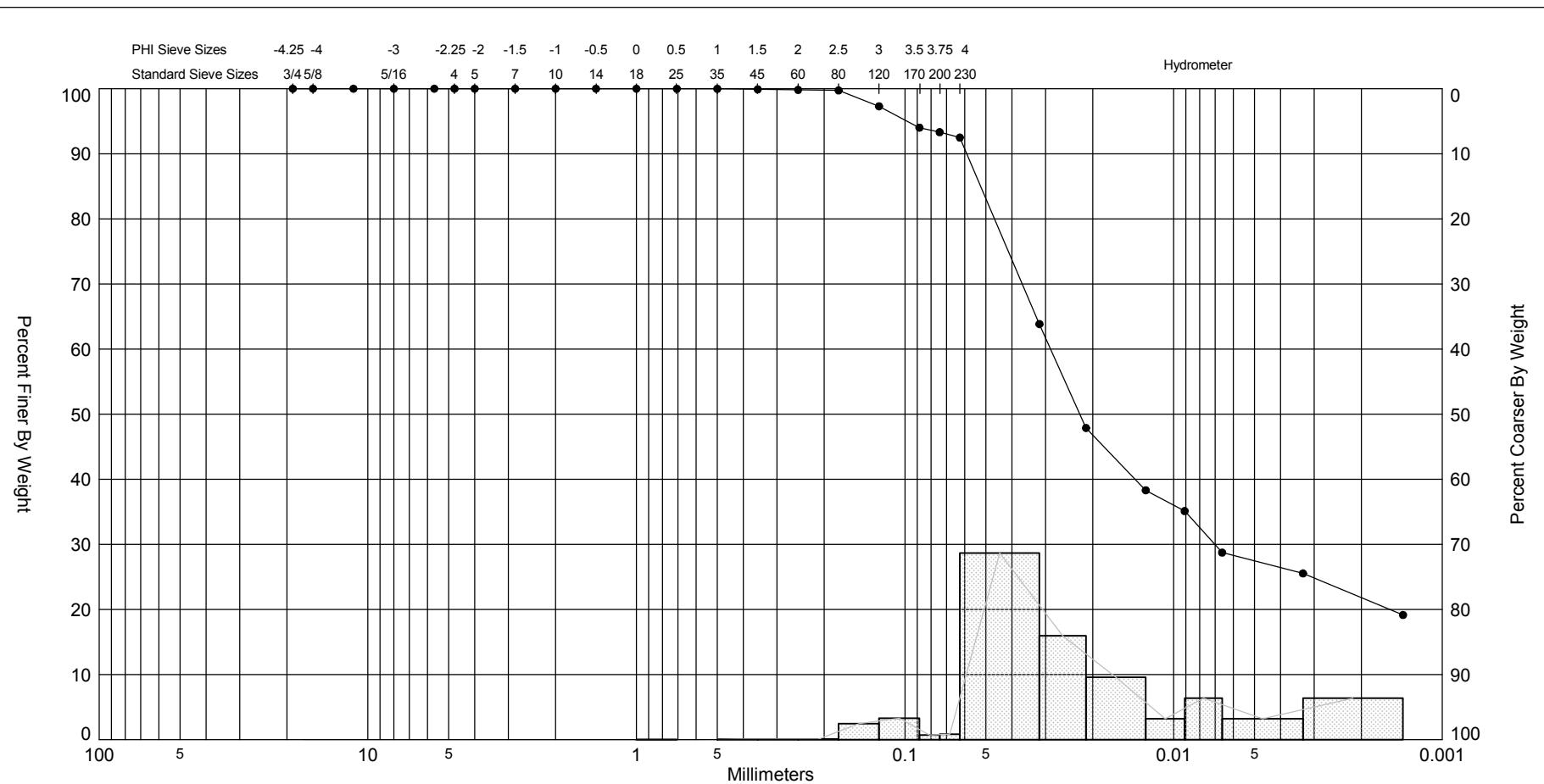
Vibracore	Sample Interval	Sample No.	gINT Granularmetrics							USC	
			Size Class (wt%)				Descriptive Statistics				
			Gravel	Sand	<#200	<#230	Mean (mm)*	Verbal	Std. Dev.(phi)		
MRE-08-05	8.7-9.0	1	0.00	27.14	72.86	71.89	0.15	F	0.53	ML-CL	
MRE-08-07	0.5-0.8	1	0.00	5.90	94.10	92.67	0.12	F	0.67	ML-CL	
MRE-08-08	2.0-2.3	2	0.00	8.99	91.01	90.73	0.19	F	1.62	ML-CL	
	6.7-7.0	4	0.00	43.52	56.48	47.56	0.10	F	0.51	ML-CL	
	9.5-9.8	5	0.00	50.20	49.80	39.54	0.09	F	0.42	SM	
	12.0-12.3	6	0.00	5.46	94.54	88.77	0.09	F	0.70	ML-CL	
	16.0-6.3	7	0.00	16.72	83.28	76.53	0.09	F	0.50	ML-CL	
MRE-08-09	2.0-2.3	1	0.00	13.95	86.05	85.77	0.21	F	0.55	ML-CL	
	16.0-16.3	6	0.00	14.10	85.90	81.40	0.09	F	0.56	ML-CL	
MRE-08-10	0.9-1.2	1	0.00	2.81	97.19	97.02	0.15	F	0.60	ML-CL	
	2.4-2.7	2	0.00	78.29	21.71	21.35	0.19	F	0.38	SM	
	17.6-17.9	4	0.00	22.34	77.66	71.55	0.10	F	0.48	ML-CL	
MRE-08-13	14.5-14.8	5	0.00	16.50	83.50	81.51	0.16	F	0.78	ML-CL	

*Mean grain size refers to coarse fraction only (>#200 sieve)

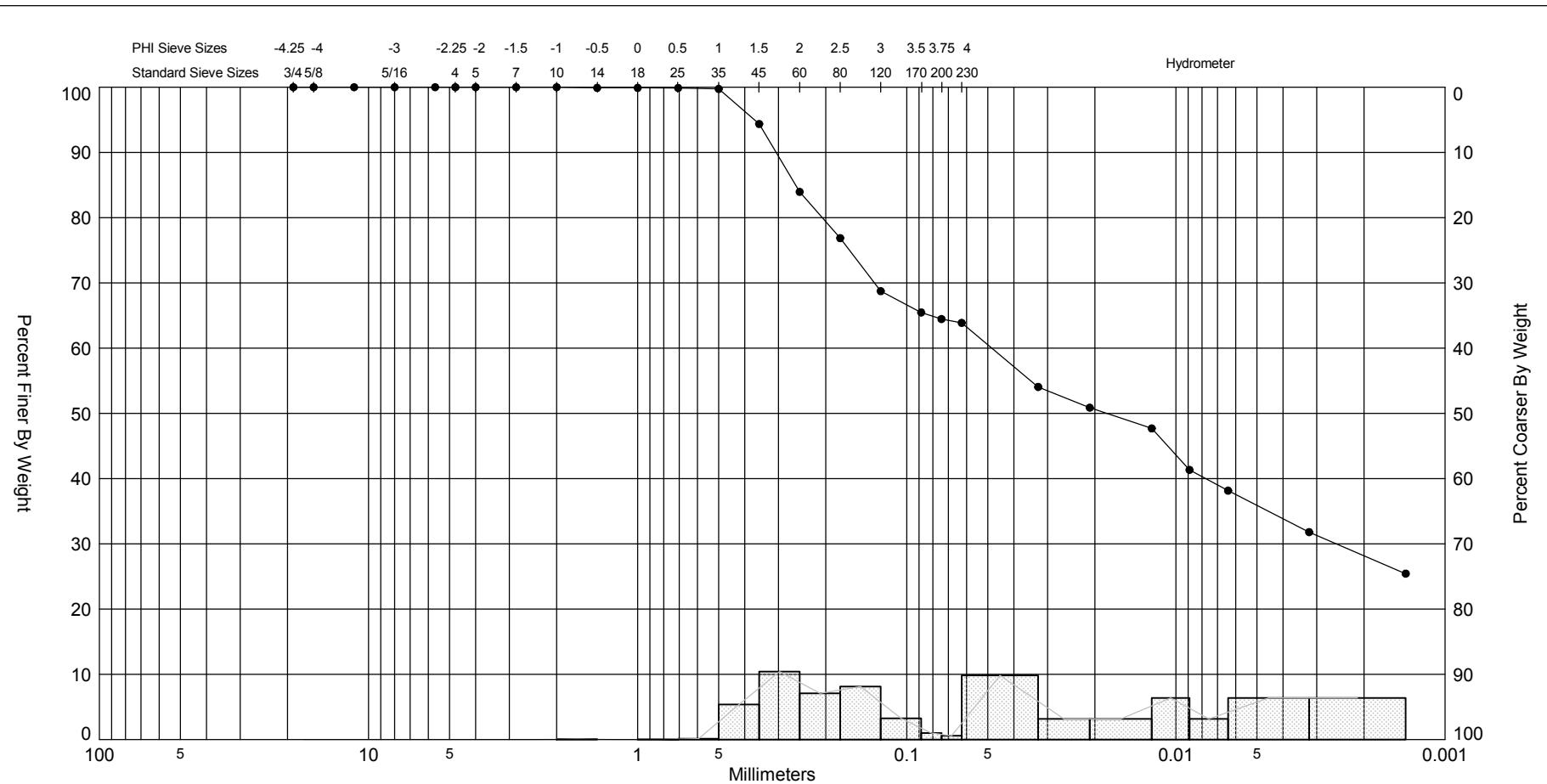
ANNEX C8

GRANULARMETRIC CURVES

HYDROMETER SAMPLES

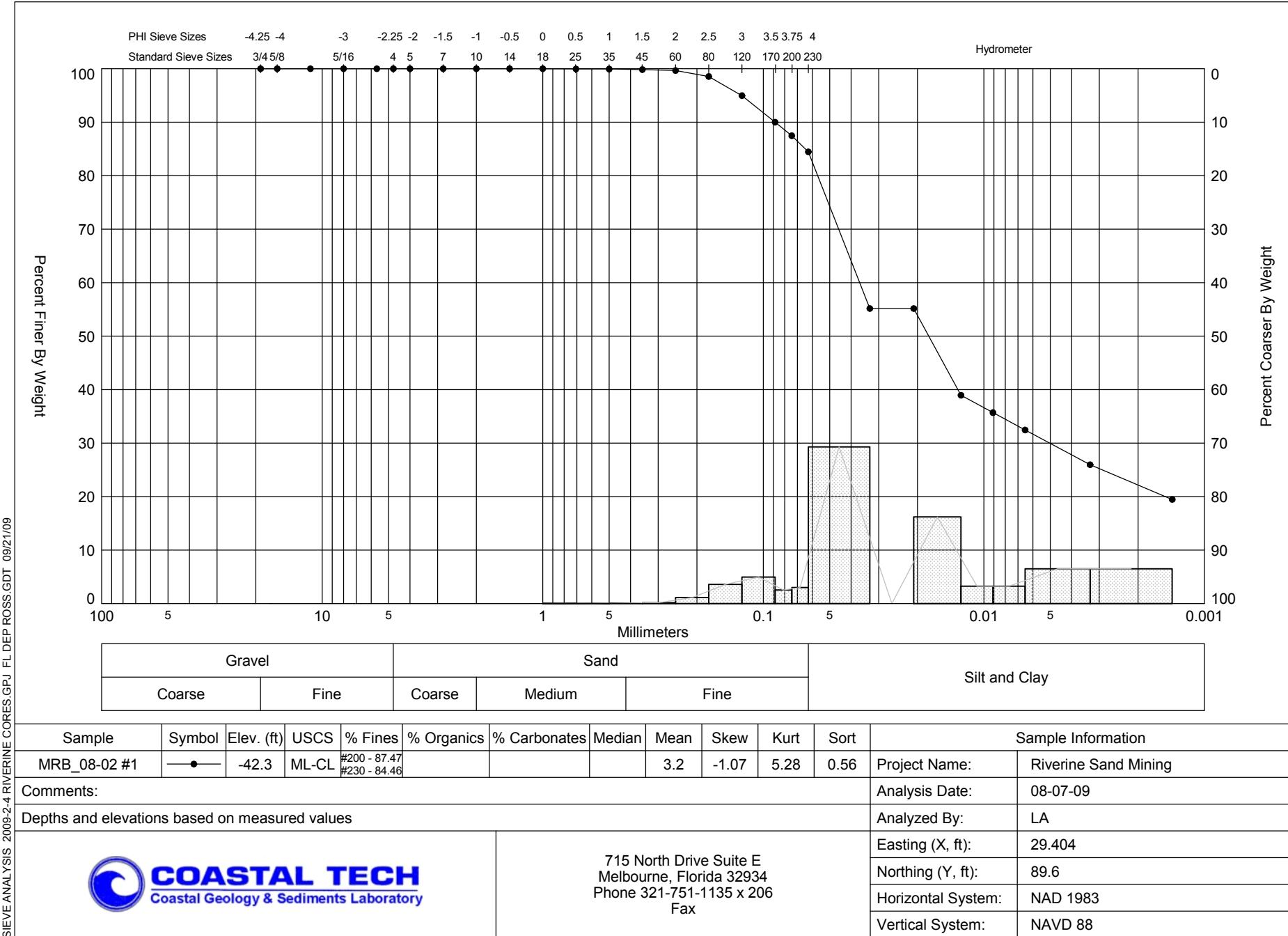


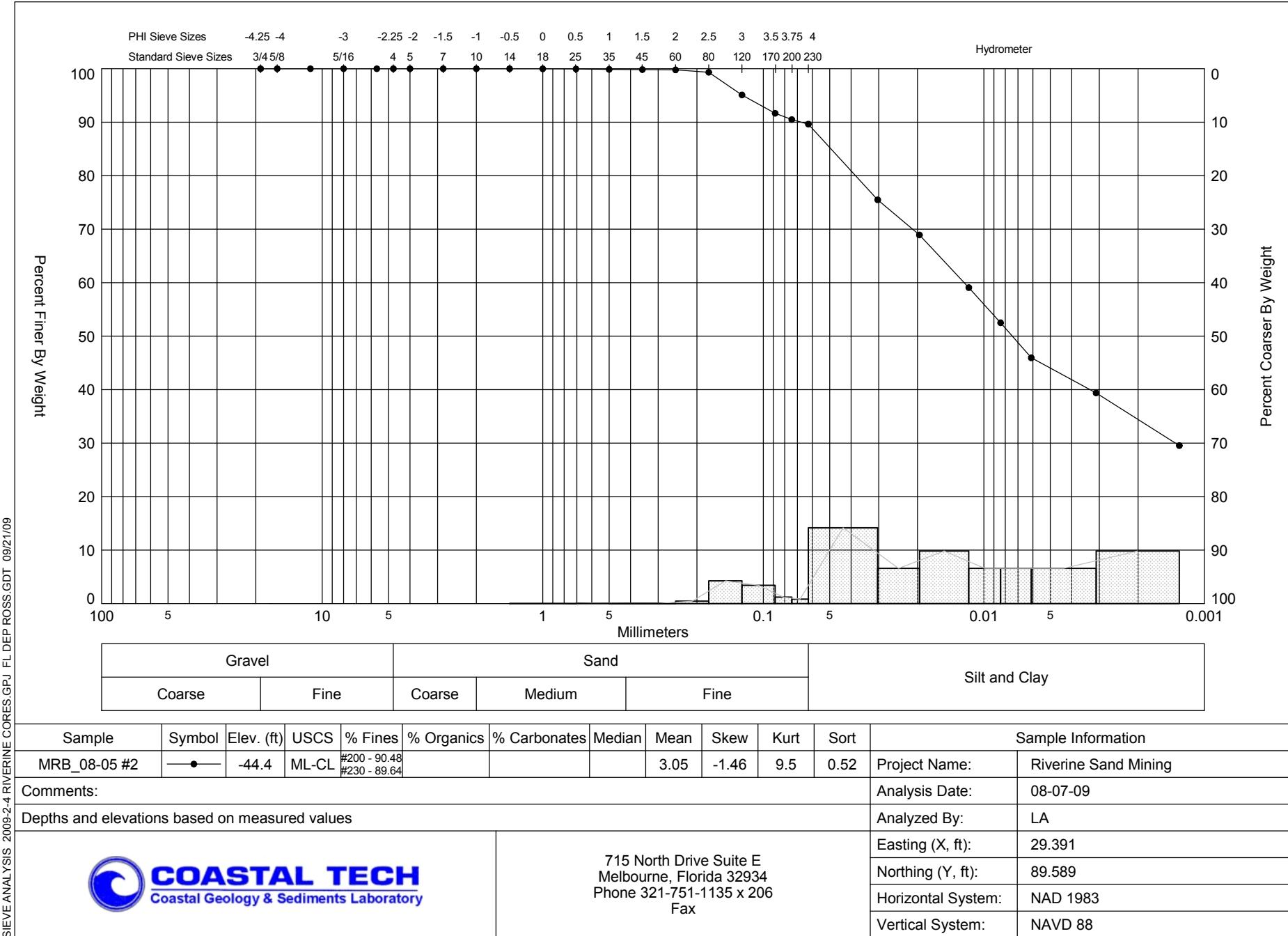
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRB_08-01 #1	●	-46.0	ML-CL	#200 - 93.32 #230 - 92.49				3.14	-1.24	8.05	0.47	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.412 Northing (Y, ft): 89.602 Horizontal System: NAD 1983 Vertical System: NAVD 88				

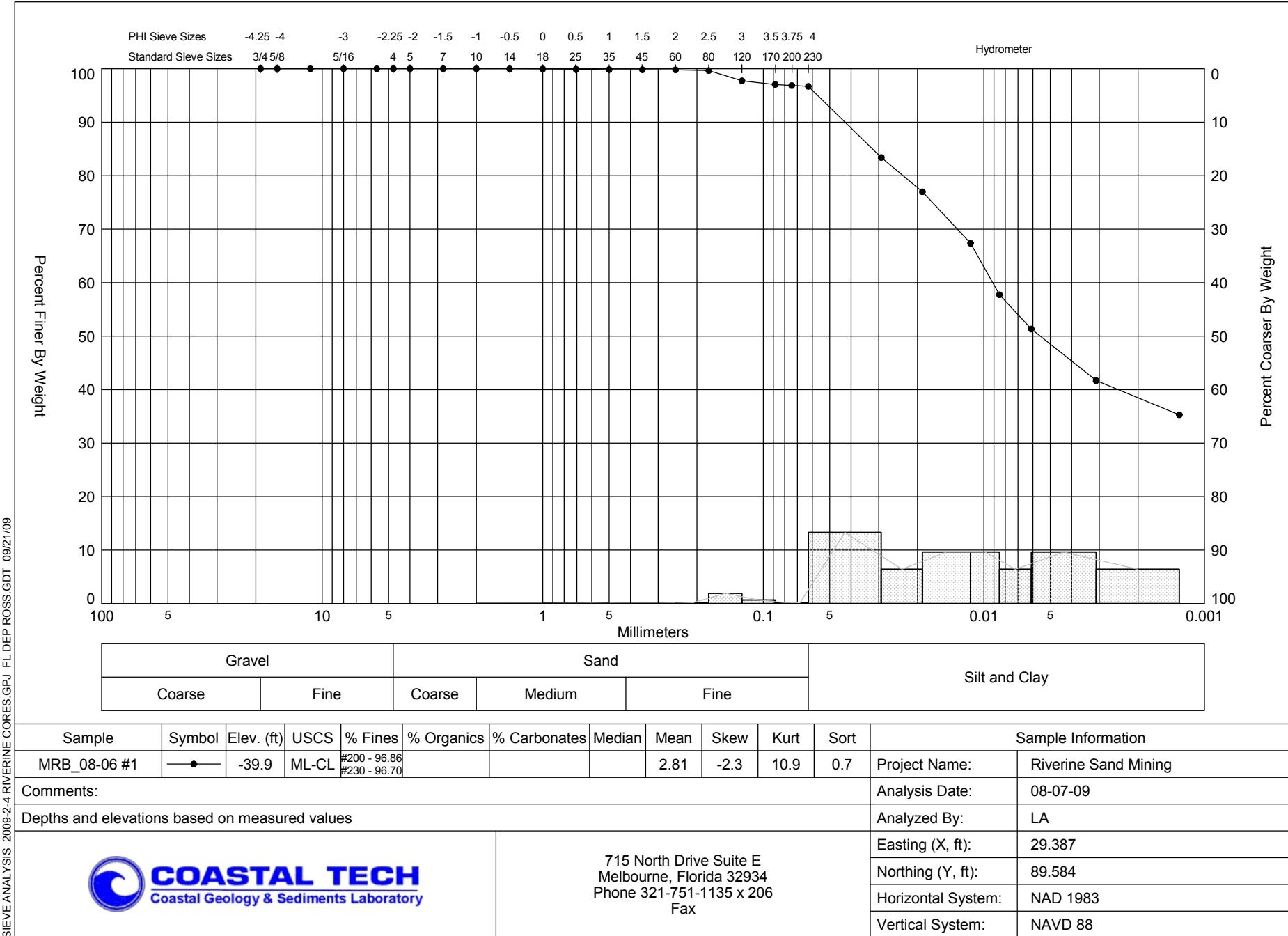


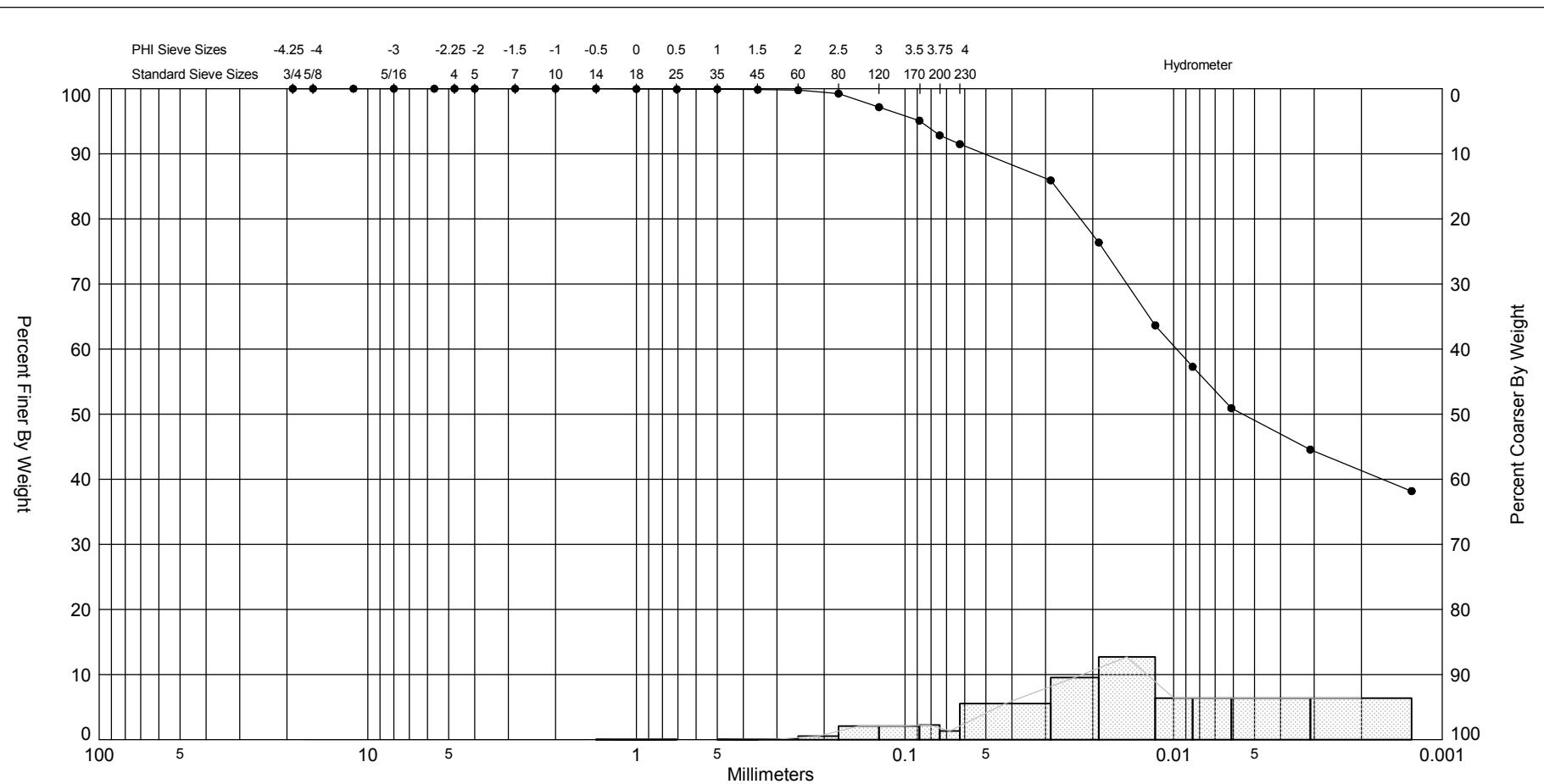
715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRB_08-01 #2	●	-63.5	ML-CL	#200 - 64.46 #230 - 63.87				2.21	0.13	2.98	0.71	Project Name:	
Comments:											Analysis Date:		
Depths and elevations based on measured values											Analyzed By:		
											Easting (X, ft):		
											Northing (Y, ft):		
											Horizontal System:		
											Vertical System:		

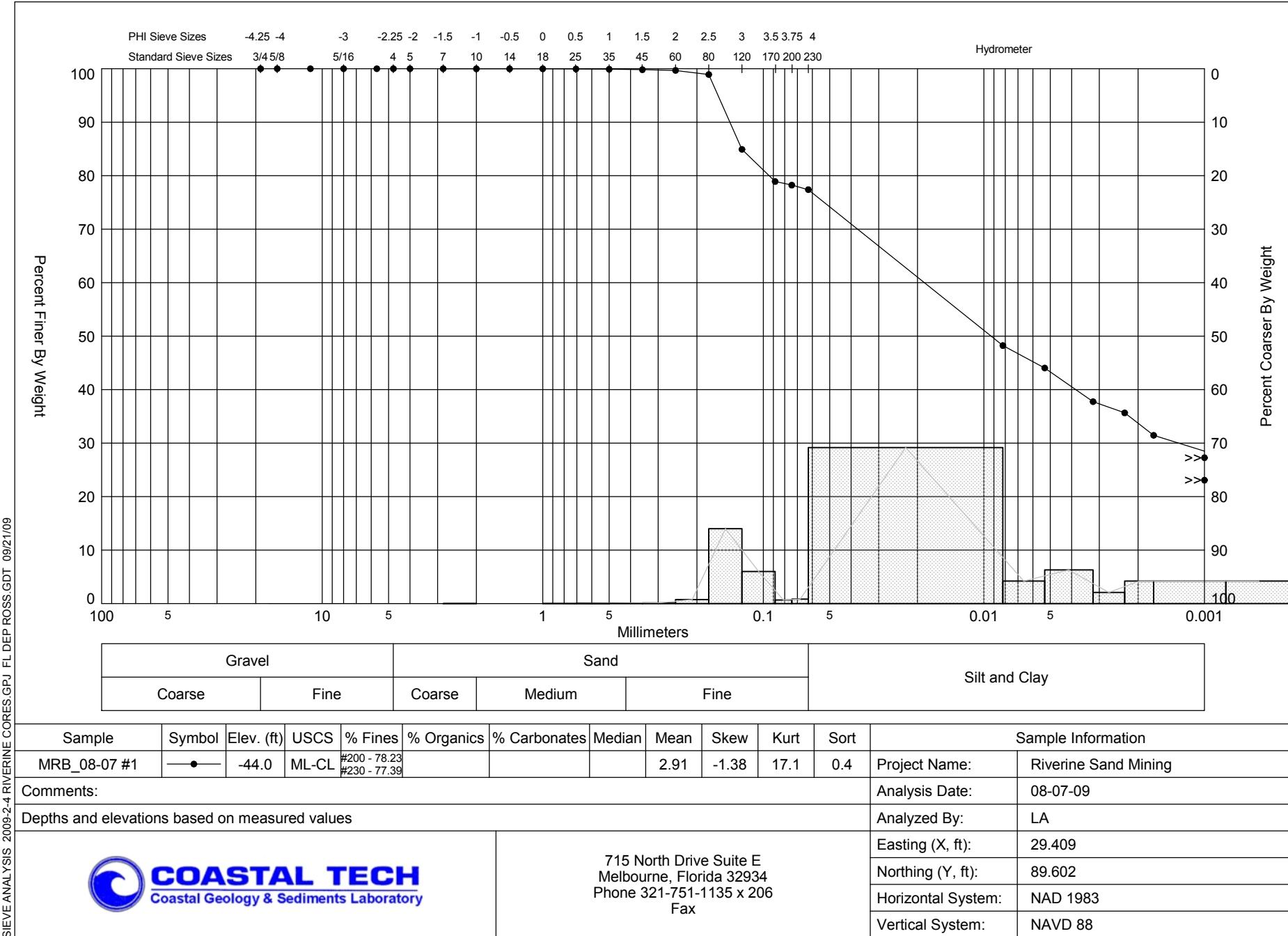


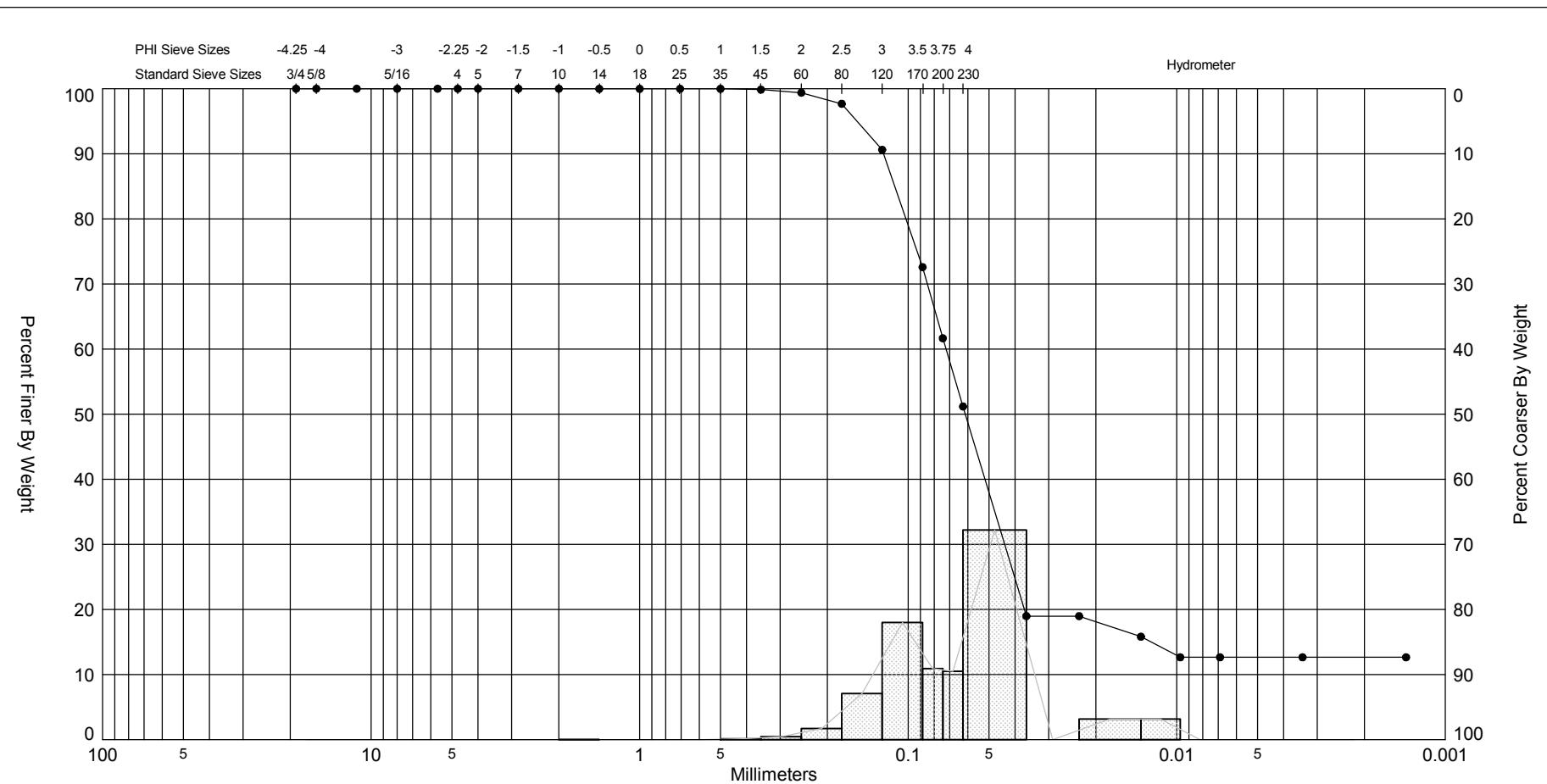




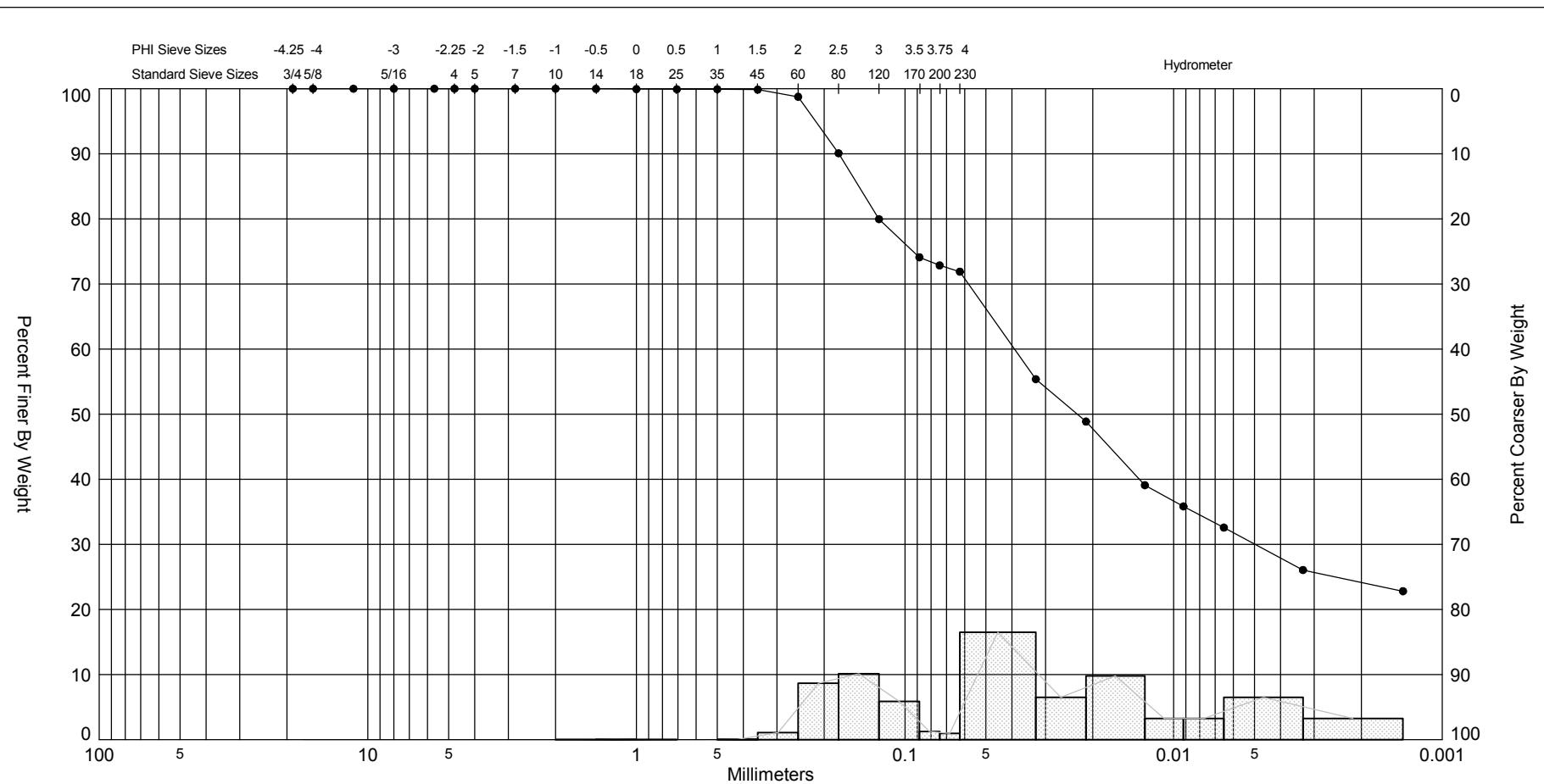


Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRB_08-06 #4	●	-61.0	ML-CL	#200 - 92.83 #230 - 91.48			3.21	-1.8	9.31	0.61		Project Name:	
Comments:												Analysis Date:	
Depths and elevations based on measured values												Analyzed By:	
												Easting (X, ft):	29.387
												Northing (Y, ft):	89.584
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

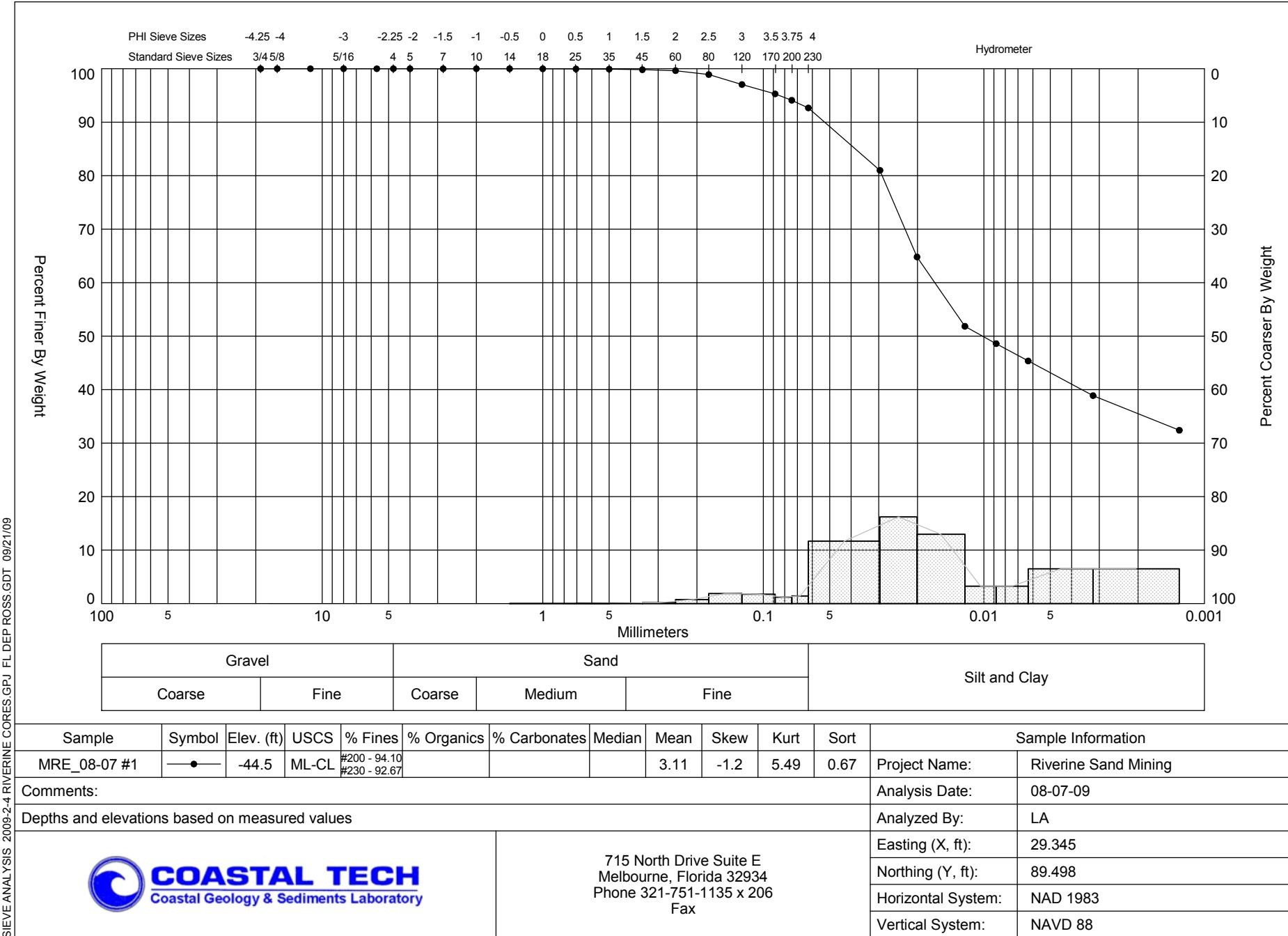


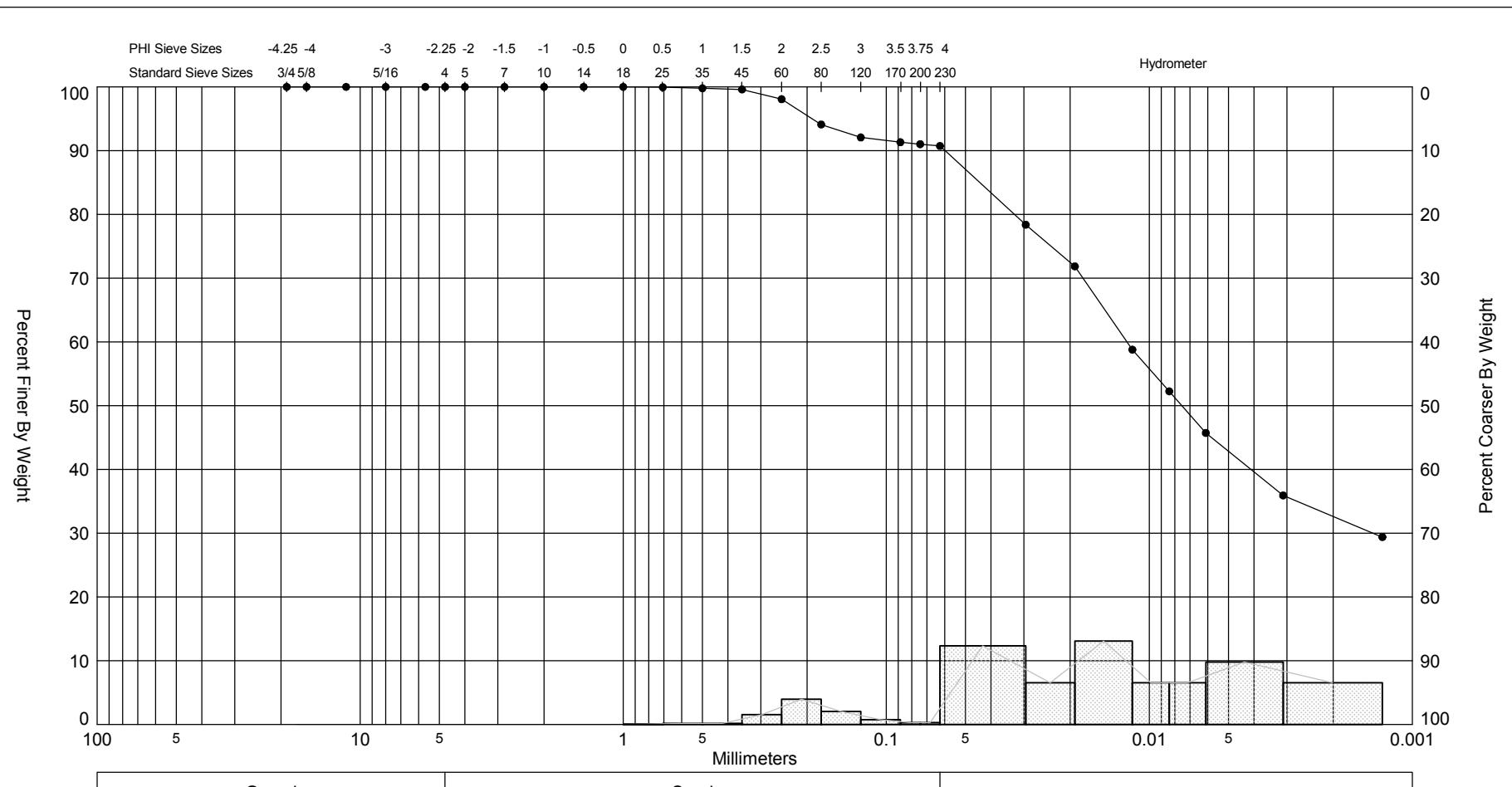


Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRB_08-07 #4	●	-56.0	ML-CL #200 - 61.66 #230 - 51.18				3.34	-1.25	6.55	0.47		Project Name:	
Comments:												Analysis Date:	
Depths and elevations based on measured values												Analyzed By:	
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	29.409
715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax												Northing (Y, ft):	89.602
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

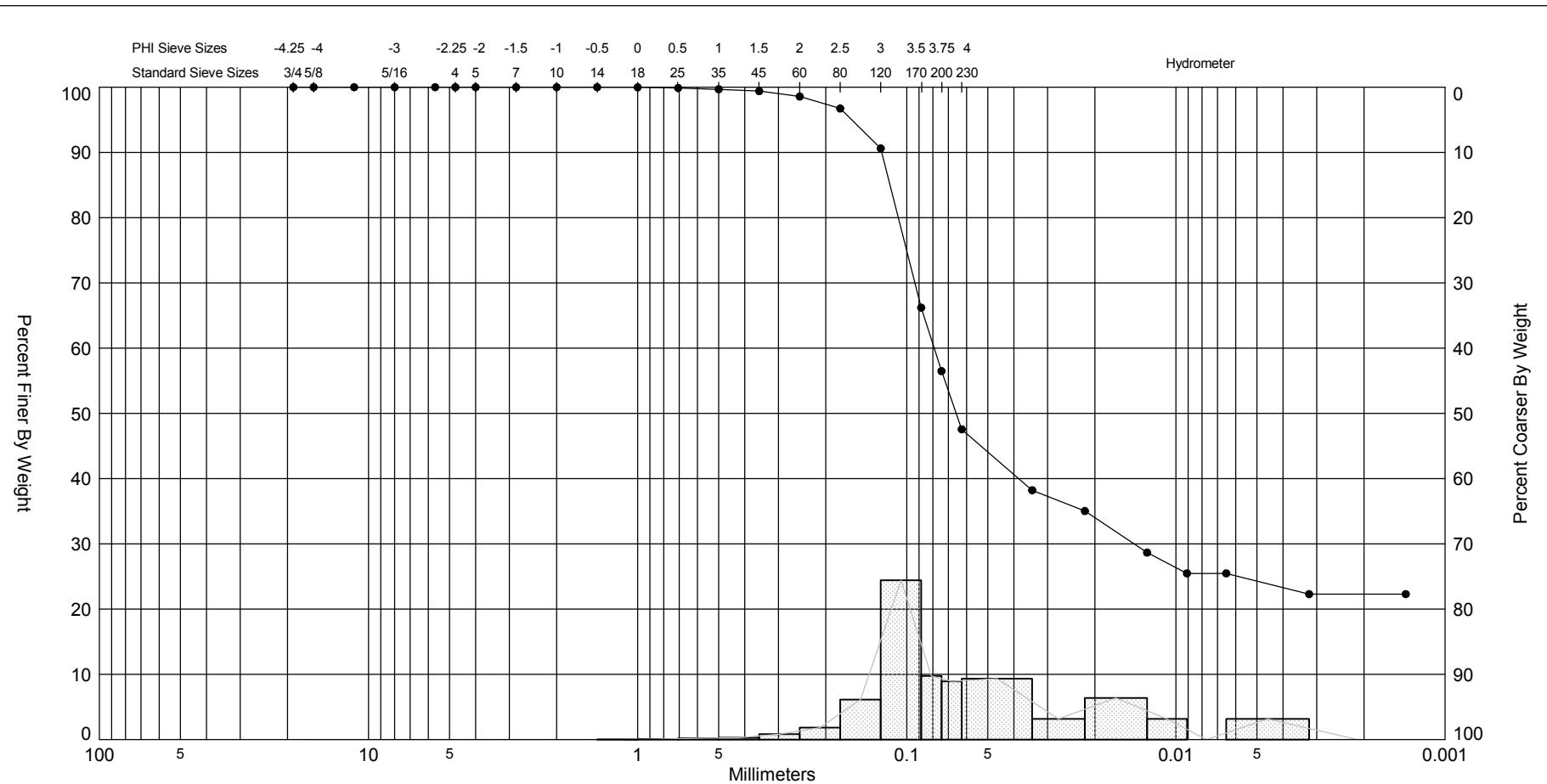


Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRE_08-05 #1	●	-50.7	ML-CL	#200 - 72.86 #230 - 71.89				2.73	-0.29	5.39	0.53	Project Name: Riverine Sand Mining	
Comments:												Analysis Date: 08-07-09	
Depths and elevations based on measured values												Analyzed By: LA	
												Easting (X, ft):	29.35
												Northing (Y, ft):	89.506
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

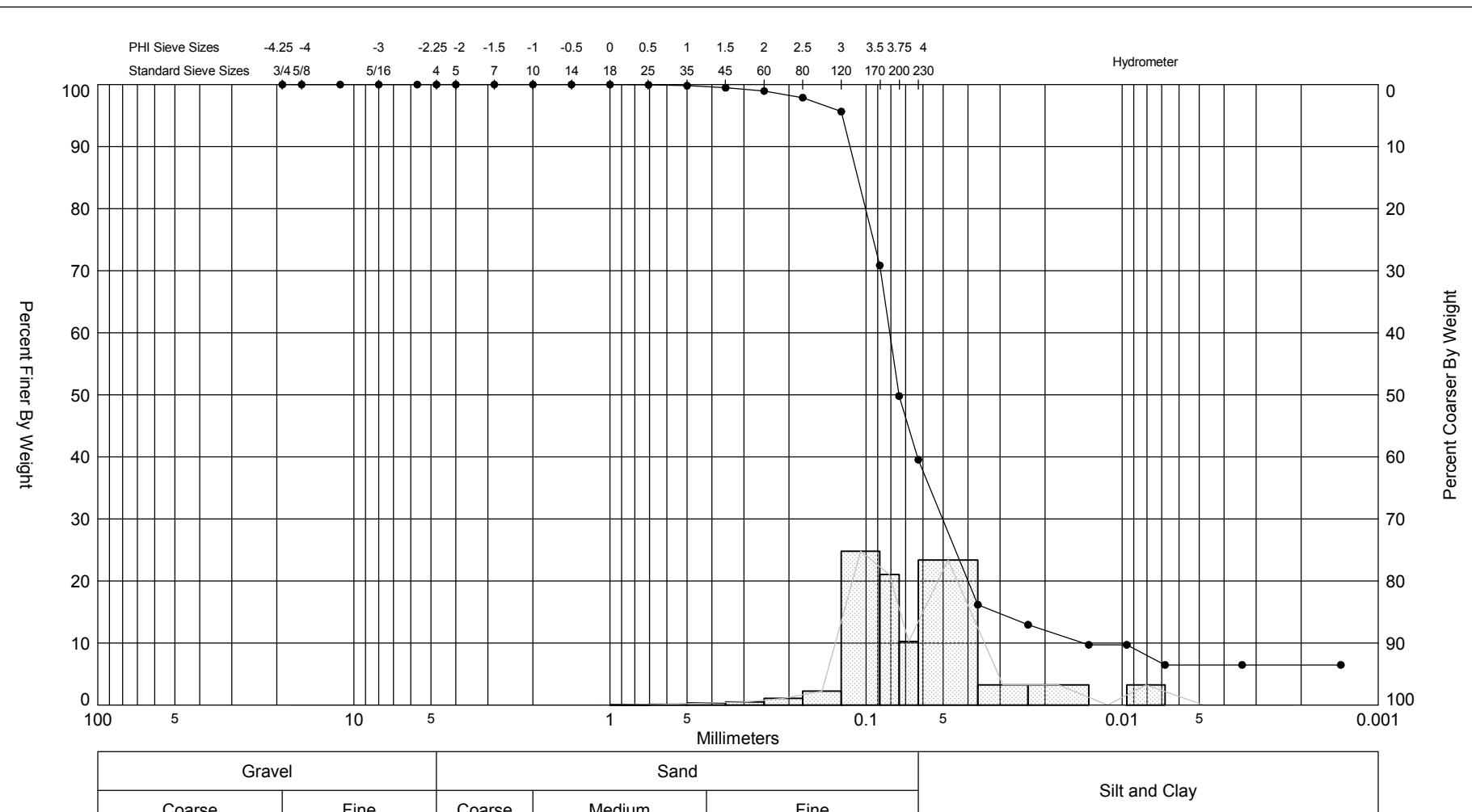




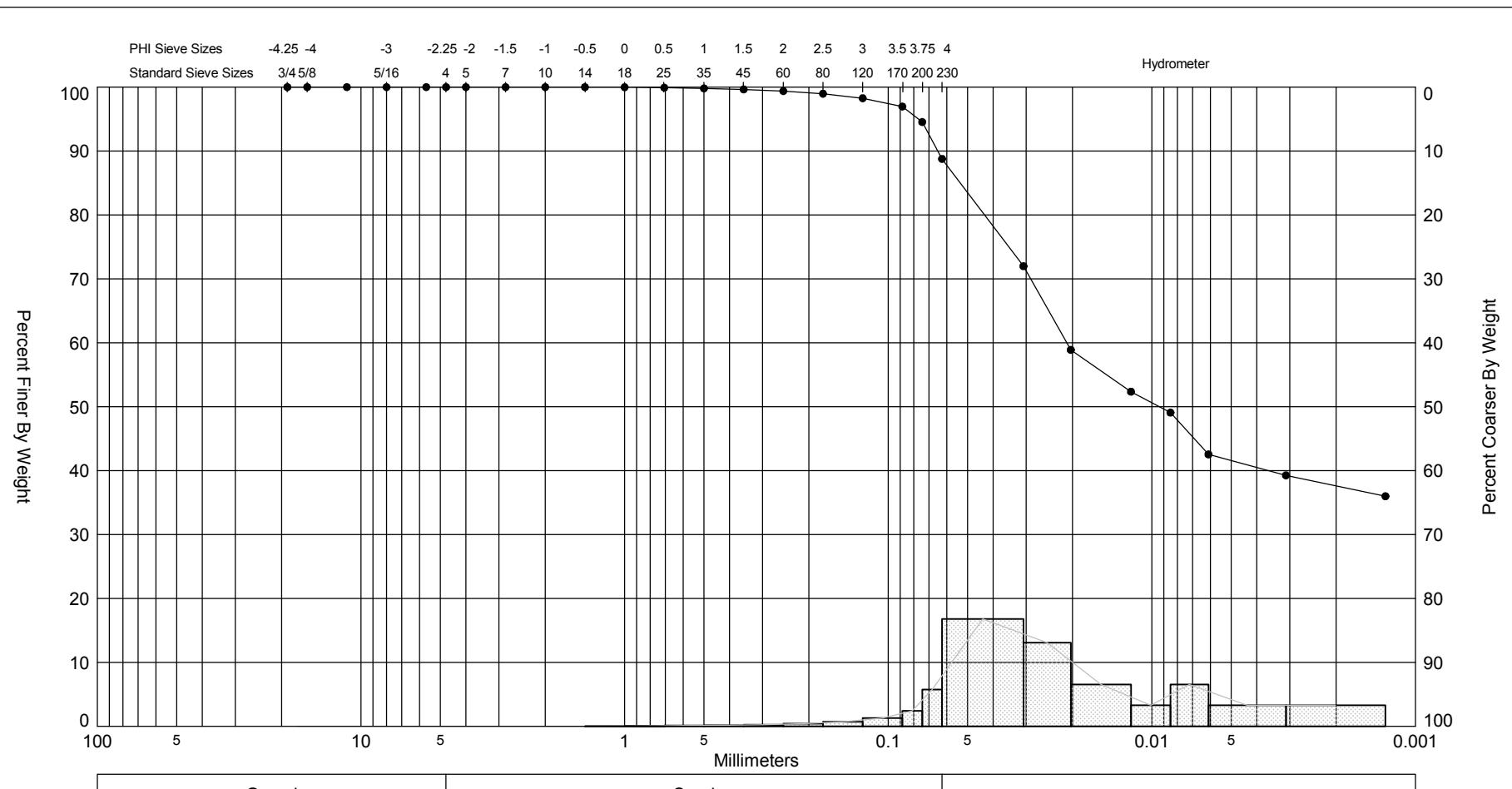
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-08 #2	●	-42.0	ML-CL	#200 - 91.01 #230 - 90.73				2.39	0.02	4.05	0.62	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.347 Northing (Y, ft): 89.499 Horizontal System: NAD 1983 Vertical System: NAVD 88				



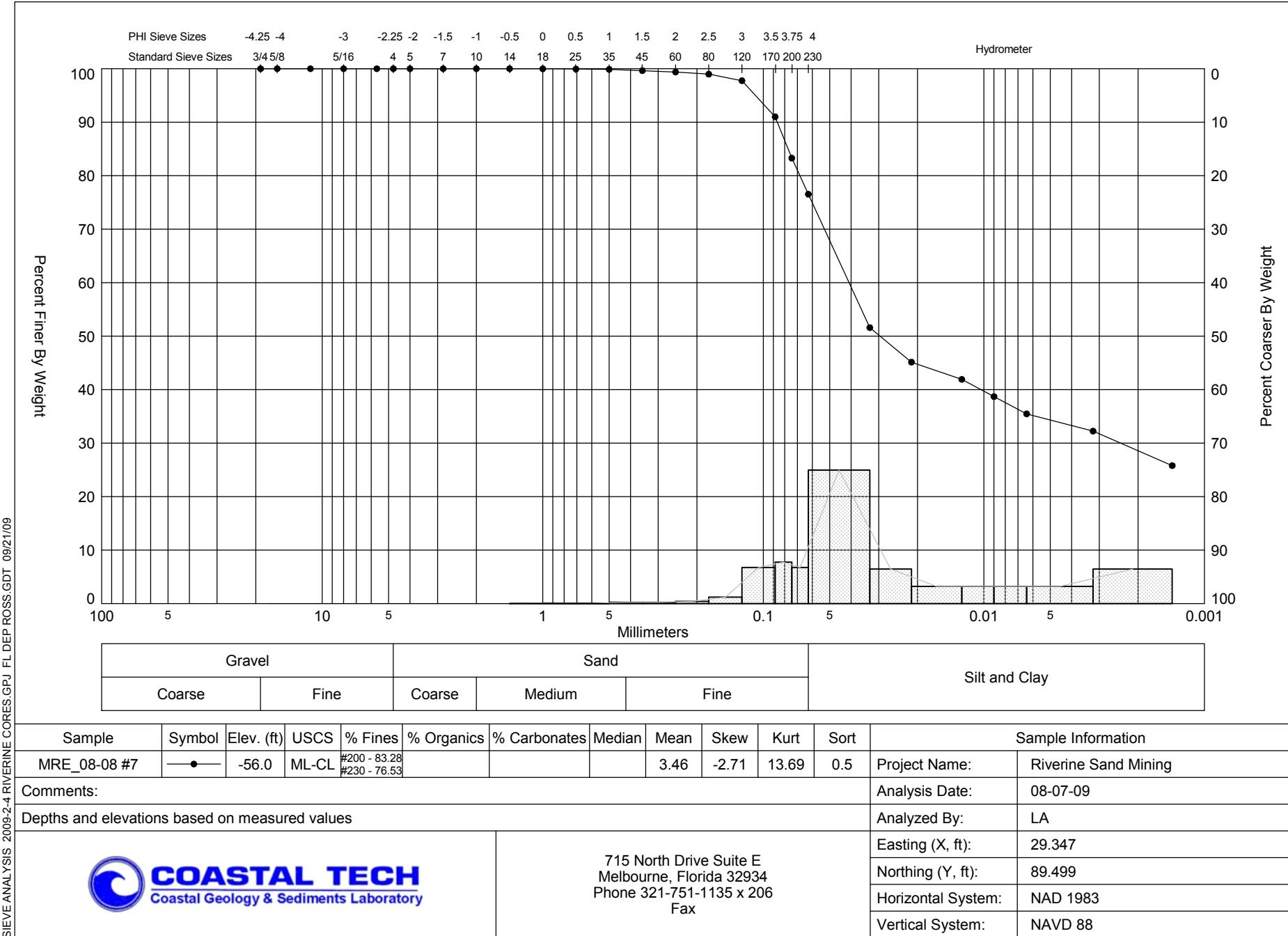
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRE_08-08 #4	●	-46.7	ML-CL	#200 - 56.48 #230 - 47.56			3.93	3.28	-1.87	9.39	0.51	Project Name:	
Comments:											Analysis Date:		
Depths and elevations based on measured values											Analyzed By:		
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.347 Northing (Y, ft): 89.499 Horizontal System: NAD 1983 Vertical System: NAVD 88		

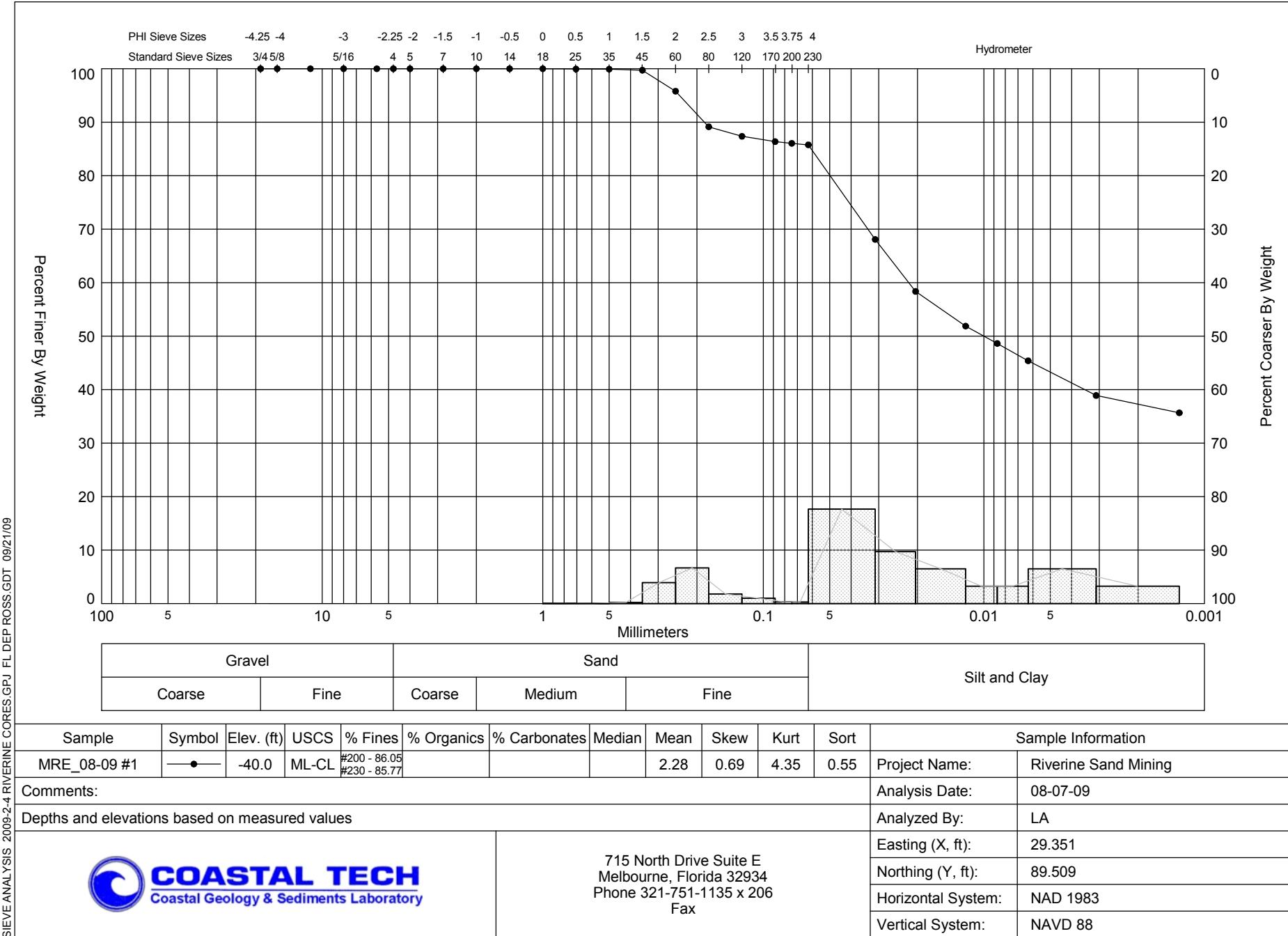


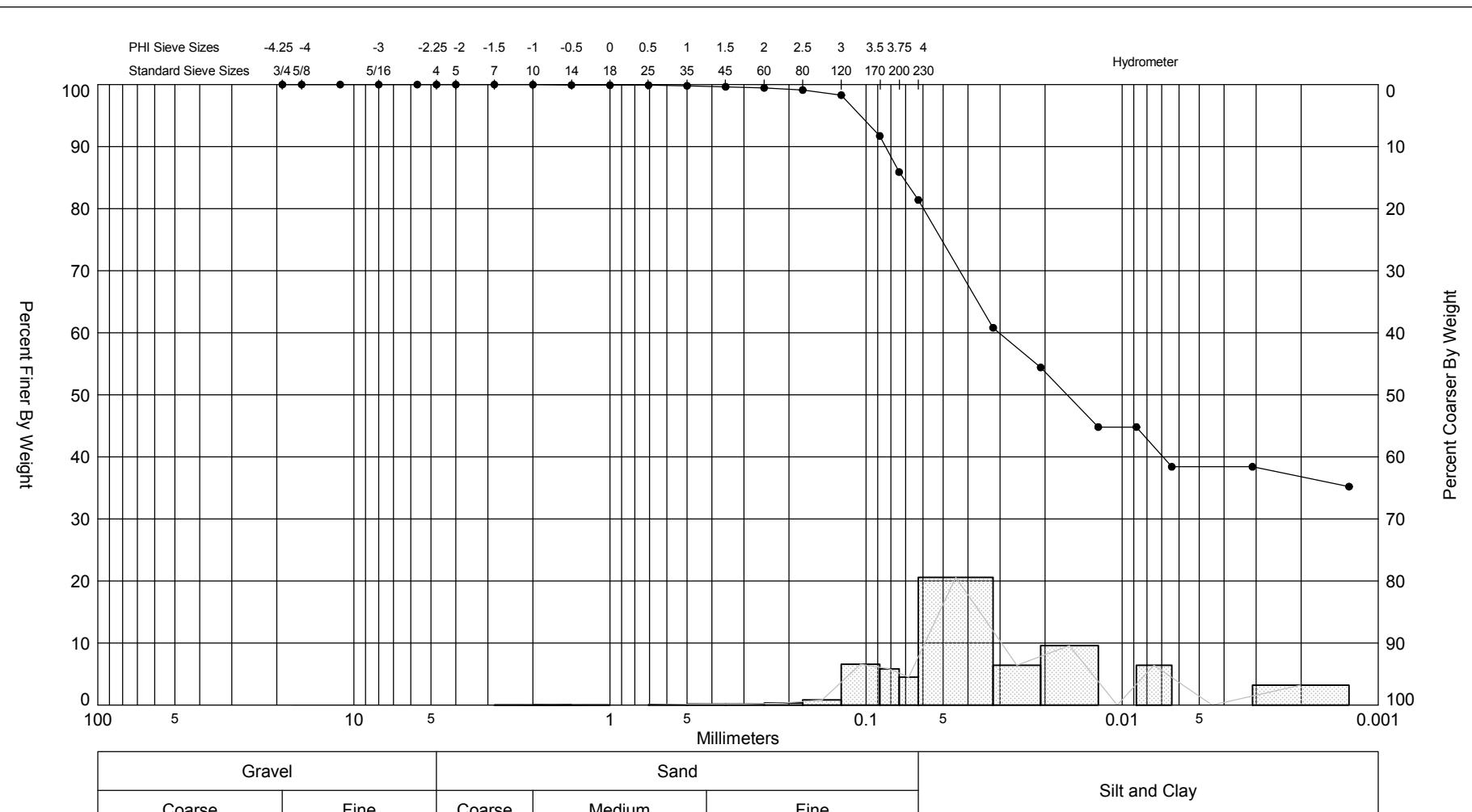
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-08 #5	●	-49.5	SM	#200 - 49.80 #230 - 39.54			3.75	3.42	-2.5	13.68	0.42	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.347 Northing (Y, ft): 89.499 Horizontal System: NAD 1983 Vertical System: NAVD 88				



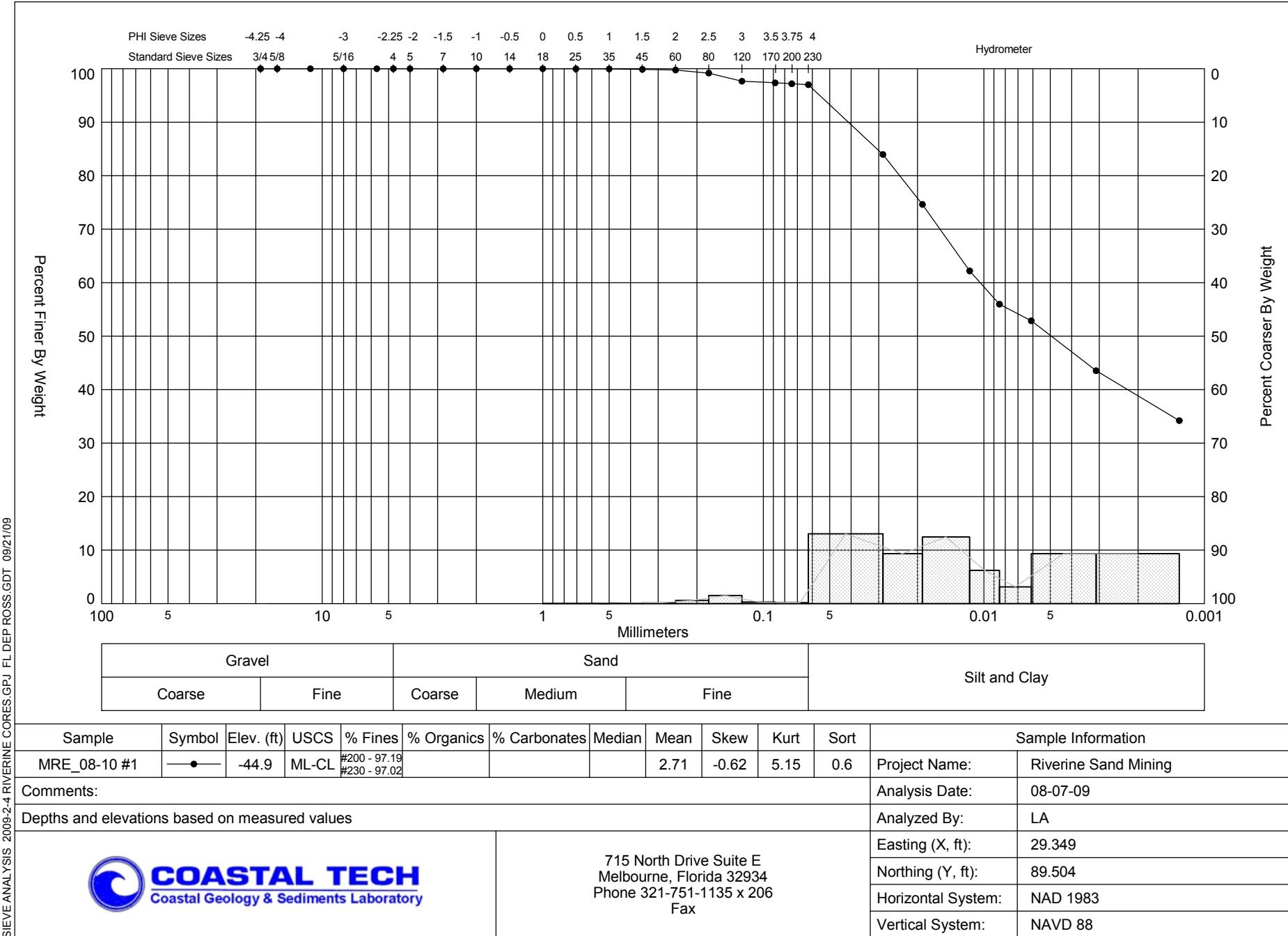
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-08 #6	●	-52.0	ML-CL	#200 - 94.54 #230 - 88.77				3.47	-2.45	9.34	0.7	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.347 Northing (Y, ft): 89.499 Horizontal System: NAD 1983 Vertical System: NAVD 88				

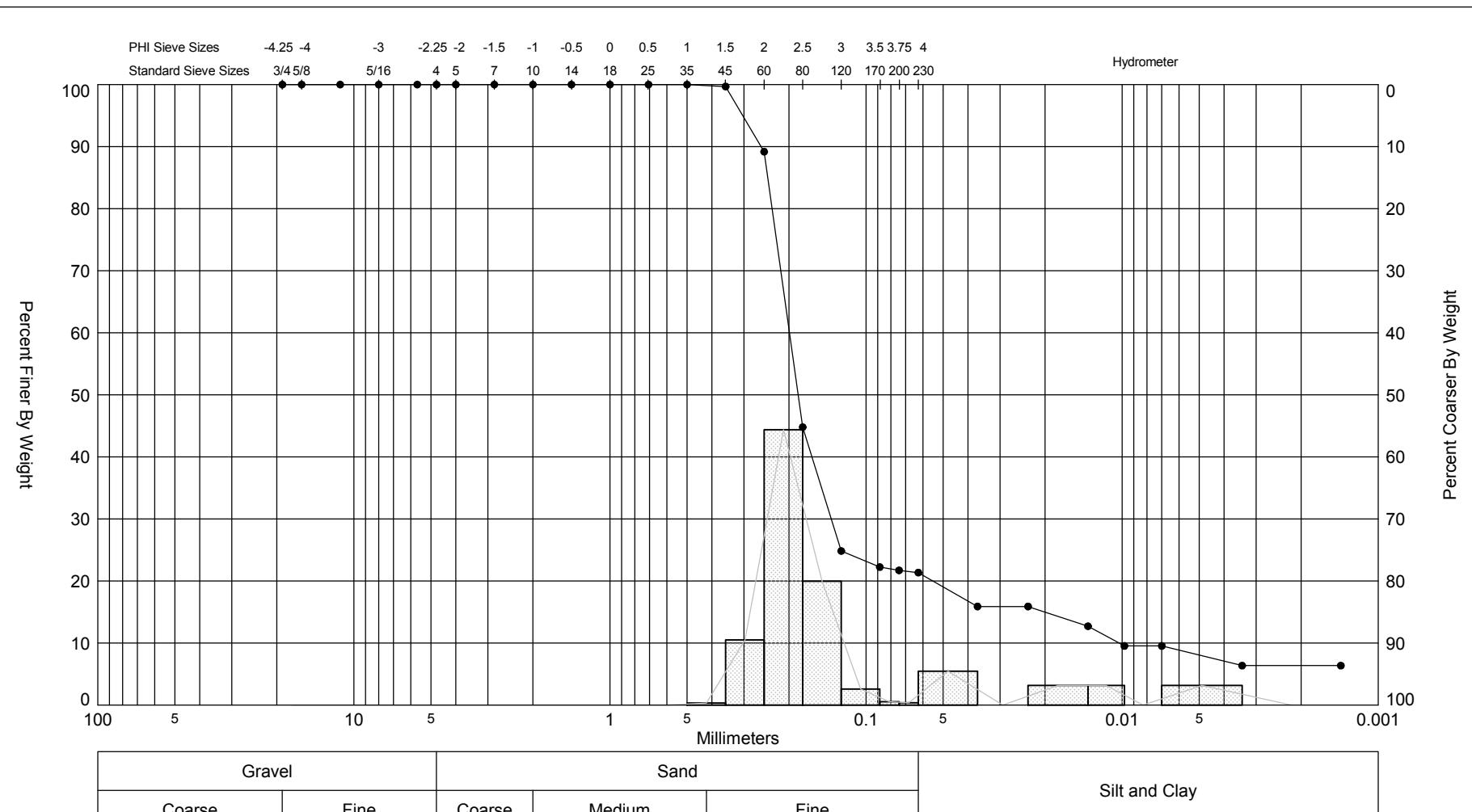




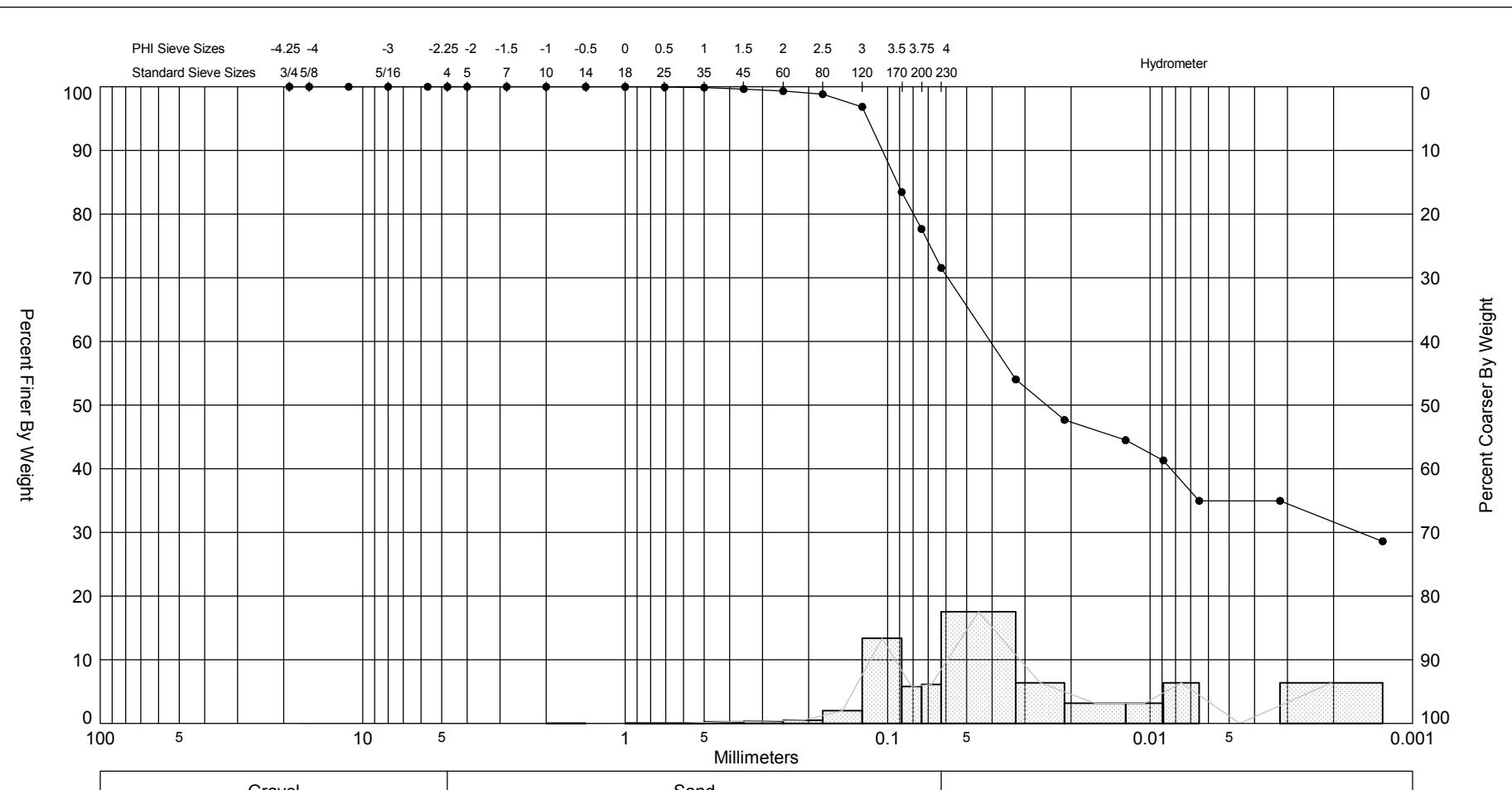


Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRE_08-09 #6	●	-54.0	ML-CL #230 - 81.40				3.41	-3.59	22.32	0.56		Project Name: Riverine Sand Mining	
Comments:												Analysis Date: 08-07-09	
Depths and elevations based on measured values												Analyzed By: LA	
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft): 29.351	
715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax												Northing (Y, ft): 89.509	
												Horizontal System: NAD 1983	
												Vertical System: NAVD 88	

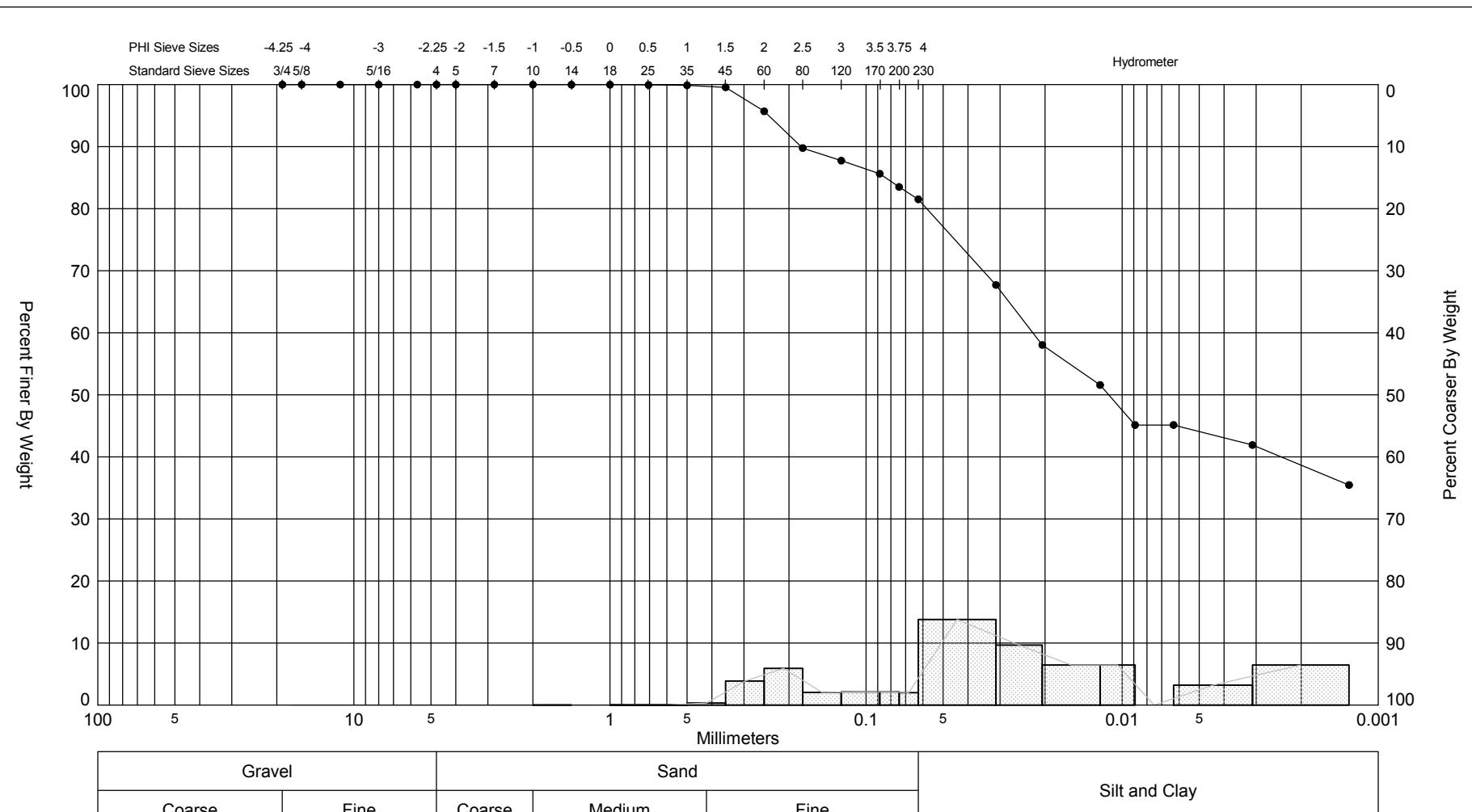




Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-10 #2	●	-46.4	SM	#200 - 21.71 #230 - 21.35			2.44	2.36	0.58	4.28	0.38	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
 COASTAL TECH Coastal Geology & Sediments Laboratory											Easting (X, ft): 29.349 Northing (Y, ft): 89.504 Horizontal System: NAD 1983 Vertical System: NAVD 88				



Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
MRE_08-10 #4	●	-61.6	ML-CL	#200 - 77.66 #230 - 71.55			3.36	-2.37	13.66	0.48		Project Name: Riverine Sand Mining	
Comments:												Analysis Date: 08-07-09	
Depths and elevations based on measured values												Analyzed By: LA	
												Easting (X, ft): 29.349	
												Northing (Y, ft): 89.504	
												Horizontal System: NAD 1983	
												Vertical System: NAVD 88	



Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
MRE_08-13 #5	●	-55.5	ML-CL	#200 - 83.50 #230 - 81.51				2.62	0.15	2.3	0.78	Project Name:			
Comments:											Analysis Date:				
Depths and elevations based on measured values											Analyzed By:				
											Easting (X, ft):				
											Northing (Y, ft):				
											Horizontal System:				
											Vertical System:				

ANNEX C9

GRANULARMETRIC TABLES

HYDROMETER SAMPLES

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-01 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.412	Northing (ft): 89.602	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -46.0 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.31	Wash Weight (g): 4.22	Pan Retained (g): 0.44	Sieve Loss (%): 0.00	Fines (%): #200 - 93.32 #230 - 92.49	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.00	0.00	0.00	0.00	0.00
14	-0.50	1.41	0.00	0.00	0.00	0.00	0.00
18	0.00	1.00	0.00	0.00	0.00	0.00	0.00
25	0.50	0.71	0.01	0.02	0.01	0.02	
35	1.00	0.50	0.00	0.00	0.01	0.02	
45	1.50	0.35	0.04	0.08	0.05	0.10	
60	2.00	0.25	0.04	0.08	0.09	0.18	
80	2.50	0.18	0.04	0.08	0.13	0.26	
120	3.00	0.13	1.23	2.44	1.36	2.70	
170	3.50	0.09	1.65	3.28	3.01	5.98	
200	3.75	0.07	0.35	0.70	3.36	6.68	
230	4.00	0.06	0.42	0.83	3.78	7.51	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
							3.35
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.14	0.11	0.47	-1.24	8.05		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-01 #2							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.412	Northing (ft): 89.602	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -63.5 NAVD 88		
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.51	Wash Weight (g): 18.47	Pan Retained (g): 0.22	Sieve Loss (%): 0.00	Fines (%): #200 - 64.46 #230 - 63.87	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.05	0.10	0.05	0.10	
18	0.00	1.00	0.00	0.00	0.05	0.10	
25	0.50	0.71	0.01	0.02	0.06	0.12	
35	1.00	0.50	0.07	0.14	0.13	0.26	
45	1.50	0.35	2.72	5.38	2.85	5.64	
60	2.00	0.25	5.26	10.41	8.11	16.05	
80	2.50	0.18	3.58	7.09	11.69	23.14	
120	3.00	0.13	4.10	8.12	15.79	31.26	
170	3.50	0.09	1.65	3.27	17.44	34.53	
200	3.75	0.07	0.51	1.01	17.95	35.54	
230	4.00	0.06	0.30	0.59	18.25	36.13	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
				2.61	2.00	1.44	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.21	0.22	0.71	0.13	2.98		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-02 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.404	Northing (ft): 89.6	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -42.3 NAVD 88		
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.49	Wash Weight (g): 9.26	Pan Retained (g): 1.55	Sieve Loss (%): 0.04	Fines (%): #200 - 87.47 #230 - 84.46	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.02	0.04	0.02	0.04	
35	1.00	0.50	0.01	0.02	0.03	0.06	
45	1.50	0.35	0.05	0.10	0.08	0.16	
60	2.00	0.25	0.09	0.18	0.17	0.34	
80	2.50	0.18	0.55	1.11	0.72	1.45	
120	3.00	0.13	1.77	3.58	2.49	5.03	
170	3.50	0.09	2.46	4.97	4.95	10.00	
200	3.75	0.07	1.25	2.53	6.20	12.53	
230	4.00	0.06	1.49	3.01	7.69	15.54	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
						3.00	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.2	0.11	0.56	-1.07	5.28		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-05 #2							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.391	Northing (ft): 89.589	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -44.4 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 48.94	Wash Weight (g): 5.43	Pan Retained (g): 0.36	Sieve Loss (%): 0.00	Fines (%): #200 - 90.48 #230 - 89.64	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.02	0.01	0.02	
25	0.50	0.71	0.01	0.02	0.02	0.04	
35	1.00	0.50	0.04	0.08	0.06	0.12	
45	1.50	0.35	0.02	0.04	0.08	0.16	
60	2.00	0.25	0.03	0.06	0.11	0.22	
80	2.50	0.18	0.22	0.45	0.33	0.67	
120	3.00	0.13	2.07	4.23	2.40	4.90	
170	3.50	0.09	1.68	3.43	4.08	8.33	
200	3.75	0.07	0.58	1.19	4.66	9.52	
230	4.00	0.06	0.41	0.84	5.07	10.36	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
							3.01
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.05	0.12	0.52	-1.46	9.5		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-06 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.387	Northing (ft): 89.584	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -39.9 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.07	Wash Weight (g): 1.71	Pan Retained (g): 0.06	Sieve Loss (%): 0.00	Fines (%): #200 - 96.86 #230 - 96.70	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.01	0.02	0.01	0.02	
18	0.00	1.00	0.01	0.02	0.02	0.04	
25	0.50	0.71	0.02	0.04	0.04	0.08	
35	1.00	0.50	0.04	0.08	0.08	0.16	
45	1.50	0.35	0.01	0.02	0.09	0.18	
60	2.00	0.25	0.01	0.02	0.10	0.20	
80	2.50	0.18	0.07	0.14	0.17	0.34	
120	3.00	0.13	0.96	1.92	1.13	2.26	
170	3.50	0.09	0.34	0.68	1.47	2.94	
200	3.75	0.07	0.10	0.20	1.57	3.14	
230	4.00	0.06	0.08	0.16	1.65	3.30	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.81	0.14	0.7	-2.3	10.9		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-06 #4							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.387	Northing (ft): 89.584	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -61.0 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.47	Wash Weight (g): 5.30	Pan Retained (g): 0.95	Sieve Loss (%): 0.10	Fines (%): #200 - 92.83 #230 - 91.48	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.02	0.04	0.02	0.04	
25	0.50	0.71	0.02	0.04	0.04	0.08	
35	1.00	0.50	0.00	0.00	0.04	0.08	
45	1.50	0.35	0.03	0.06	0.07	0.14	
60	2.00	0.25	0.04	0.08	0.11	0.22	
80	2.50	0.18	0.27	0.53	0.38	0.75	
120	3.00	0.13	1.05	2.08	1.43	2.83	
170	3.50	0.09	1.05	2.08	2.48	4.91	
200	3.75	0.07	1.14	2.26	3.62	7.17	
230	4.00	0.06	0.68	1.35	4.30	8.52	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
							3.51
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.21	0.11	0.61	-1.8	9.31		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-07 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.409	Northing (ft): 89.602	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -44.0 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.79	Wash Weight (g): 11.61	Pan Retained (g): 0.35	Sieve Loss (%): 0.00	Fines (%): #200 - 78.23 #230 - 77.39	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.01	0.02	0.01	0.02	
14	-0.50	1.41	0.00	0.00	0.01	0.02	
18	0.00	1.00	0.00	0.00	0.01	0.02	
25	0.50	0.71	0.01	0.02	0.02	0.04	
35	1.00	0.50	0.03	0.06	0.05	0.10	
45	1.50	0.35	0.04	0.08	0.09	0.18	
60	2.00	0.25	0.07	0.14	0.16	0.32	
80	2.50	0.18	0.38	0.76	0.54	1.08	
120	3.00	0.13	6.97	14.00	7.51	15.08	
170	3.50	0.09	2.99	6.01	10.50	21.09	
200	3.75	0.07	0.34	0.68	10.84	21.77	
230	4.00	0.06	0.42	0.84	11.26	22.61	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
					3.08	2.64	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.91	0.13	0.4	-1.38	17.1		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRB_08-07 #4							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.409	Northing (ft): 89.602	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -56.0 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.78	Wash Weight (g): 29.56	Pan Retained (g): 4.76	Sieve Loss (%): 0.02	Fines (%): #200 - 61.66 #230 - 51.18	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.01	0.02	0.01	0.02	
18	0.00	1.00	0.00	0.00	0.01	0.02	
25	0.50	0.71	0.00	0.00	0.01	0.02	
35	1.00	0.50	0.00	0.00	0.01	0.02	
45	1.50	0.35	0.06	0.12	0.07	0.14	
60	2.00	0.25	0.24	0.47	0.31	0.61	
80	2.50	0.18	0.87	1.71	1.18	2.32	
120	3.00	0.13	3.59	7.07	4.77	9.39	
170	3.50	0.09	9.15	18.02	13.92	27.41	
200	3.75	0.07	5.55	10.93	19.47	38.34	
230	4.00	0.06	5.32	10.48	24.79	48.82	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
				3.43	3.18	2.69	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.34	0.10	0.47	-1.25	6.55		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-05 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.35	Northing (ft): 89.506	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -50.7 NAVD 88		
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.30	Wash Weight (g): 14.56	Pan Retained (g): 0.62	Sieve Loss (%): 0.16	Fines (%): #200 - 72.86 #230 - 71.89	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.01	0.02	0.01	0.02	
18	0.00	1.00	0.02	0.04	0.03	0.06	
25	0.50	0.71	0.01	0.02	0.04	0.08	
35	1.00	0.50	0.00	0.00	0.04	0.08	
45	1.50	0.35	0.03	0.06	0.07	0.14	
60	2.00	0.25	0.54	1.10	0.61	1.24	
80	2.50	0.18	4.28	8.68	4.89	9.92	
120	3.00	0.13	4.99	10.12	9.88	20.04	
170	3.50	0.09	2.89	5.86	12.77	25.90	
200	3.75	0.07	0.61	1.24	13.38	27.14	
230	4.00	0.06	0.48	0.97	13.86	28.11	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
				3.42	2.80	2.22	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.73	0.15	0.53	-0.29	5.39		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-07 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.345	Northing (ft): 89.498	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -44.5 NAVD 88		
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.57	Wash Weight (g): 6.63	Pan Retained (g): 2.96	Sieve Loss (%): 0.08	Fines (%): #200 - 94.10 #230 - 92.67	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.02	0.01	0.02	
25	0.50	0.71	0.01	0.02	0.02	0.04	
35	1.00	0.50	0.02	0.04	0.04	0.08	
45	1.50	0.35	0.05	0.10	0.09	0.18	
60	2.00	0.25	0.09	0.18	0.18	0.36	
80	2.50	0.18	0.36	0.73	0.54	1.09	
120	3.00	0.13	0.92	1.86	1.46	2.95	
170	3.50	0.09	0.87	1.76	2.33	4.71	
200	3.75	0.07	0.59	1.19	2.92	5.90	
230	4.00	0.06	0.71	1.43	3.63	7.33	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
							3.56
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.11	0.12	0.67	-1.2	5.49		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-08 #2							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.499	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -42.0 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.18	Wash Weight (g): 4.67	Pan Retained (g): 0.11	Sieve Loss (%): 0.00	Fines (%): #200 - 91.01 #230 - 90.73	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.00	0.00	0.00	0.00	0.00
14	-0.50	1.41	0.00	0.00	0.00	0.00	0.00
18	0.00	1.00	0.00	0.00	0.00	0.00	0.00
25	0.50	0.71	0.03	0.06	0.03	0.06	
35	1.00	0.50	0.08	0.16	0.11	0.22	
45	1.50	0.35	0.09	0.18	0.20	0.40	
60	2.00	0.25	0.75	1.53	0.95	1.93	
80	2.50	0.18	1.95	3.97	2.90	5.90	
120	3.00	0.13	1.00	2.03	3.90	7.93	
170	3.50	0.09	0.37	0.75	4.27	8.68	
200	3.75	0.07	0.15	0.31	4.42	8.99	
230	4.00	0.06	0.14	0.28	4.56	9.27	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
							2.39
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.39	0.19	0.62	0.02	4.05		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-08 #4							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.499	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -46.7 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.79	Wash Weight (g): 30.40	Pan Retained (g): 3.77	Sieve Loss (%): 0.00	Fines (%): #200 - 56.48 #230 - 47.56	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.02	0.01	0.02	
25	0.50	0.71	0.05	0.10	0.06	0.12	
35	1.00	0.50	0.10	0.20	0.16	0.32	
45	1.50	0.35	0.14	0.28	0.30	0.60	
60	2.00	0.25	0.42	0.83	0.72	1.43	
80	2.50	0.18	0.93	1.83	1.65	3.26	
120	3.00	0.13	3.11	6.12	4.76	9.38	
170	3.50	0.09	12.40	24.41	17.16	33.79	
200	3.75	0.07	4.94	9.73	22.10	43.52	
230	4.00	0.06	4.53	8.92	26.63	52.44	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
			3.93	3.32	3.14	2.64	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.28	0.10	0.51	-1.87	9.39		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-08 #5							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.499	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -49.5 NAVD 88				
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 49.61	Wash Weight (g): 34.41	Pan Retained (g): 4.41	Sieve Loss (%): 0.00	Fines (%): #200 - 49.80 #230 - 39.54	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.02	0.04	0.02	0.04	
35	1.00	0.50	0.07	0.14	0.09	0.18	
45	1.50	0.35	0.17	0.34	0.26	0.52	
60	2.00	0.25	0.26	0.52	0.52	1.04	
80	2.50	0.18	0.53	1.07	1.05	2.11	
120	3.00	0.13	1.11	2.24	2.16	4.35	
170	3.50	0.09	12.30	24.79	14.46	29.14	
200	3.75	0.07	10.45	21.06	24.91	50.20	
230	4.00	0.06	5.09	10.26	30.00	60.46	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
			3.75	3.42	3.23	3.01	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.42	0.09	0.42	-2.5	13.68		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-08 #6							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.499	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -52.0 NAVD 88		
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.09	Wash Weight (g): 10.28	Pan Retained (g): 4.75	Sieve Loss (%): 0.02	Fines (%): #200 - 94.54 #230 - 88.77	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.02	0.01	0.02	
25	0.50	0.71	0.03	0.06	0.04	0.08	
35	1.00	0.50	0.06	0.12	0.10	0.20	
45	1.50	0.35	0.08	0.16	0.18	0.36	
60	2.00	0.25	0.13	0.26	0.31	0.62	
80	2.50	0.18	0.20	0.41	0.51	1.03	
120	3.00	0.13	0.35	0.71	0.86	1.74	
170	3.50	0.09	0.64	1.30	1.50	3.04	
200	3.75	0.07	1.19	2.42	2.69	5.46	
230	4.00	0.06	2.83	5.77	5.52	11.23	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
							3.70
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.47	0.09	0.7	-2.45	9.34		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-08 #7							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.499	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -56.0 NAVD 88		
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.81	Wash Weight (g): 17.66	Pan Retained (g): 5.93	Sieve Loss (%): 0.08	Fines (%): #200 - 83.28 #230 - 76.53	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.01	0.02	0.01	0.02	
25	0.50	0.71	0.02	0.04	0.03	0.06	
35	1.00	0.50	0.03	0.06	0.06	0.12	
45	1.50	0.35	0.12	0.24	0.18	0.36	
60	2.00	0.25	0.13	0.26	0.31	0.62	
80	2.50	0.18	0.20	0.40	0.51	1.02	
120	3.00	0.13	0.61	1.22	1.12	2.24	
170	3.50	0.09	3.36	6.75	4.48	8.99	
200	3.75	0.07	3.85	7.73	8.33	16.72	
230	4.00	0.06	3.36	6.75	11.69	23.47	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
					3.73	3.20	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.46	0.09	0.5	-2.71	13.69		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-09 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.351	Northing (ft): 89.509	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -40.0 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.54	Wash Weight (g): 7.34	Pan Retained (g): 0.29	Sieve Loss (%): 0.00	Fines (%): #200 - 86.05 #230 - 85.77	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.00	0.00	0.00	0.00	0.00
14	-0.50	1.41	0.00	0.00	0.00	0.00	0.00
18	0.00	1.00	0.00	0.00	0.00	0.00	0.00
25	0.50	0.71	0.03	0.06	0.03	0.06	
35	1.00	0.50	0.01	0.02	0.04	0.08	
45	1.50	0.35	0.10	0.20	0.14	0.28	
60	2.00	0.25	1.94	3.92	2.08	4.20	
80	2.50	0.18	3.30	6.66	5.38	10.86	
120	3.00	0.13	0.88	1.78	6.26	12.64	
170	3.50	0.09	0.49	0.99	6.75	13.63	
200	3.75	0.07	0.16	0.32	6.91	13.95	
230	4.00	0.06	0.14	0.28	7.05	14.23	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
							2.06
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.28	0.21	0.55	0.69	4.35		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-09 #6							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.351	Northing (ft): 89.509	Coordinate System: Geographic (Latitude/Longitude)			Elevation (ft): -54.0 NAVD 88		
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.18	Wash Weight (g): 14.40	Pan Retained (g): 4.98	Sieve Loss (%): 0.18	Fines (%): #200 - 85.90 #230 - 81.40	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.01	0.02	0.01	0.02	
14	-0.50	1.41	0.03	0.06	0.04	0.08	
18	0.00	1.00	0.01	0.02	0.05	0.10	
25	0.50	0.71	0.00	0.00	0.05	0.10	
35	1.00	0.50	0.05	0.10	0.10	0.20	
45	1.50	0.35	0.08	0.16	0.18	0.36	
60	2.00	0.25	0.09	0.18	0.27	0.54	
80	2.50	0.18	0.17	0.34	0.44	0.88	
120	3.00	0.13	0.41	0.82	0.85	1.70	
170	3.50	0.09	3.30	6.58	4.15	8.28	
200	3.75	0.07	2.92	5.82	7.07	14.10	
230	4.00	0.06	2.26	4.50	9.33	18.60	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
					3.86	3.25	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.41	0.09	0.56	-3.59	22.32		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-10 #1							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.349	Northing (ft): 89.504	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -44.9 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 51.65	Wash Weight (g): 1.79	Pan Retained (g): 0.25	Sieve Loss (%): 0.00	Fines (%): #200 - 97.19 #230 - 97.02	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.01	0.02	0.01	0.02	
35	1.00	0.50	0.01	0.02	0.02	0.04	
45	1.50	0.35	0.04	0.08	0.06	0.12	
60	2.00	0.25	0.06	0.12	0.12	0.24	
80	2.50	0.18	0.30	0.58	0.42	0.82	
120	3.00	0.13	0.78	1.51	1.20	2.33	
170	3.50	0.09	0.16	0.31	1.36	2.64	
200	3.75	0.07	0.09	0.17	1.45	2.81	
230	4.00	0.06	0.09	0.17	1.54	2.98	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.71	0.15	0.6	-0.62	5.15		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-10 #2							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.349	Northing (ft): 89.504	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -46.4 NAVD 88				
USCS: SM	Munsell:	Comments:					
Dry Weight (g): 50.55	Wash Weight (g): 39.96	Pan Retained (g): 0.07	Sieve Loss (%): 0.26	Fines (%): #200 - 21.71 #230 - 21.35	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.00	0.00	0.00	0.00	
18	0.00	1.00	0.00	0.00	0.00	0.00	
25	0.50	0.71	0.00	0.00	0.00	0.00	
35	1.00	0.50	0.00	0.00	0.00	0.00	
45	1.50	0.35	0.16	0.32	0.16	0.32	
60	2.00	0.25	5.31	10.50	5.47	10.82	
80	2.50	0.18	22.44	44.39	27.91	55.21	
120	3.00	0.13	10.09	19.96	38.00	75.17	
170	3.50	0.09	1.31	2.59	39.31	77.76	
200	3.75	0.07	0.27	0.53	39.58	78.29	
230	4.00	0.06	0.18	0.36	39.76	78.65	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		3.00	2.44	2.16	2.06	1.72	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.36	0.19	0.38	0.58	4.28		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-10 #4							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.349	Northing (ft): 89.504	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -61.6 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 50.54	Wash Weight (g): 20.28	Pan Retained (g): 5.89	Sieve Loss (%): 0.02	Fines (%): #200 - 77.66 #230 - 71.55	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.00	0.00	0.00	0.00	0.00
14	-0.50	1.41	0.01	0.02	0.01	0.02	
18	0.00	1.00	0.00	0.00	0.01	0.02	
25	0.50	0.71	0.02	0.04	0.03	0.06	
35	1.00	0.50	0.03	0.06	0.06	0.12	
45	1.50	0.35	0.12	0.24	0.18	0.36	
60	2.00	0.25	0.16	0.32	0.34	0.68	
80	2.50	0.18	0.25	0.49	0.59	1.17	
120	3.00	0.13	1.00	1.98	1.59	3.15	
170	3.50	0.09	6.77	13.39	8.36	16.54	
200	3.75	0.07	2.93	5.80	11.29	22.34	
230	4.00	0.06	3.09	6.11	14.38	28.45	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
				3.86	3.48	3.07	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	3.36	0.10	0.48	-2.37	13.66		

Granularmetric Report Depths and elevations based on measured values				 COASTAL TECH Coastal Geology & Sediments Laboratory			
Project Name: Riverine Sand Mining				715 North Drive Suite E Melbourne, Florida 32934 Phone 321-751-1135 x 206 Fax			
Sample Name: MRE_08-13 #5							
Analysis Date: 08-07-09							
Analyzed By: LA							
Easting (ft): 29.347	Northing (ft): 89.502	Coordinate System: Geographic (Latitude/Longitude)	Elevation (ft): -55.5 NAVD 88				
USCS: ML-CL	Munsell:	Comments:					
Dry Weight (g): 49.81	Wash Weight (g): 11.28	Pan Retained (g): 2.07	Sieve Loss (%): 0.00	Fines (%): #200 - 83.50 #230 - 81.51	Organics (%):	Carbonates (%):	Shells (%):
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	
4	-2.25	4.76	0.00	0.00	0.00	0.00	
5	-2.00	4.00	0.00	0.00	0.00	0.00	
7	-1.50	2.83	0.00	0.00	0.00	0.00	
10	-1.00	2.00	0.00	0.00	0.00	0.00	
14	-0.50	1.41	0.01	0.02	0.01	0.02	
18	0.00	1.00	0.00	0.00	0.01	0.02	
25	0.50	0.71	0.02	0.04	0.03	0.06	
35	1.00	0.50	0.03	0.06	0.06	0.12	
45	1.50	0.35	0.16	0.32	0.22	0.44	
60	2.00	0.25	1.93	3.87	2.15	4.31	
80	2.50	0.18	2.95	5.92	5.10	10.23	
120	3.00	0.13	1.01	2.03	6.11	12.26	
170	3.50	0.09	1.05	2.11	7.16	14.37	
200	3.75	0.07	1.06	2.13	8.22	16.50	
230	4.00	0.06	0.99	1.99	9.21	18.49	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
					3.69	2.06	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.62	0.16	0.78	0.15	2.3		

ANNEX C10

HYDROMETER REPORTS

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRB-08-01: 2.0-2.3 (#1)		Melbourne, FL 32934		
Analysis Date: 6/17/09		Phone (321) 751- 1135		
Analyzed By: LA		Fax (321) 751- 2343		
X =29.412 Y = 89.602		Coordinate System: GCS NAD83		Depth (ft): 2.0-2.3
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.31298	Hydrometer ID: #2	Hydrometer Type: ASTM 151H	Composite Correction -.003	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	20	21.00	0.0316	63.8
5	15	21.00	0.0212	47.9
15	12	20.50	0.0127	38.3
30	11	20.00	0.0091	35.1
60	9	20.00	0.0066	28.7
250	8	19.50	0.0033	25.5
1440	6	19.50	0.0014	19.2

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRB-08-01: 19.5-19.8 (#2)		Melbourne, FL 32934		
Analysis Date: 6/17/09		Phone (321) 751- 1135		
Analyzed By: LA		Fax (321) 751- 2343		
X =29.412 Y = 89.602		Coordinate System: GCS NAD83		Depth (ft): 19.5-19.8
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.51089	Hydrometer ID: #3	Hydrometer Type: ASTM 151H	Composite Correction -.004	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	17	21.75	0.0325	54.1
5	16	21.25	0.0209	50.9
15	15	20.50	0.0123	47.7
30	13	20.00	0.0089	41.3
60	12	19.75	0.0064	38.2
250	10	19.50	0.0032	31.8
1440	8	19.50	0.0014	25.4

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRB-08-02: 0.3-0.6 (#1)		Melbourne, FL 32934		
Analysis Date: 6/11/09		Phone (321) 751- 1135		
Analyzed By: LA, JV		Fax (321) 751- 2343		
X =29.404 Y = 89.600		Coordinate System: GCS NAD83		Depth (ft): 0.3-0.6
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.48892	Hydrometer ID: #3	Hydrometer Type: ASTM 151H	Composite Correction -.004	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	17	20.50	0.0329	55.2
5	17	20.50	0.0208	55.2
15	12	20.25	0.0127	38.9
30	11	20.00	0.0091	35.7
60	10	20.00	0.0065	32.5
250	8	19.50	0.0033	26.0
1440	6	19.50	0.0014	19.5

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRB-08-05: 3.4-3.7 (#2)		Melbourne, FL 32934		
Analysis Date: 6/9/09		Phone (321) 751- 1135		
Analyzed By: LA, JV		Fax (321) 751- 2343		
X = 29.391 Y= 89.589		Coordinate System: GCS NAD83		Depth (ft): 3.4-3.7
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 48.9371	Hydrometer ID: #3	Hydrometer Type: ASTM 151H	Composite Correction -.004	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	23	21.50	0.0303	75.5
5	21	21.50	0.0196	68.9
15	18	22.00	0.0117	59.1
30	16	22.25	0.0084	52.5
60	14	22.25	0.0061	45.9
250	12	21.50	0.0031	39.4
1440	9	20.50	0.0013	29.5

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRB-08-06: 1.9-2.2 (#1)	Melbourne, FL 32934			
Analysis Date: 6/11/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X =29.387 Y = 89.584	Coordinate System: GCS NAD83		Depth (ft): 1.9-2.2	
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.07129	Hydrometer ID: #3	Hydrometer Type: ASTM 151H	Composite Correction -.004	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	26	21.25	0.0292	83.4
5	24	21.00	0.0190	77.0
15	21	20.50	0.0115	67.4
30	18	20.00	0.0085	57.7
60	16	20.00	0.0061	51.3
250	13	19.50	0.0031	41.7
1440	11	19.50	0.0013	35.3

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRB-08-06: 23.0-23.3 (#4)		Melbourne, FL 32934		
Analysis Date: 6/17/09		Phone (321) 751- 1135		
Analyzed By: LA		Fax (321) 751- 2343		
X =29.387 Y = 89.584		Coordinate System: GCS NAD83		Depth (ft): 23.0-23.3
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.46931	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction -.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	27	21.50	0.0287	85.9
5	24	21.00	0.0190	76.4
15	20	20.25	0.0117	63.6
30	18	20.00	0.0085	57.3
60	16	20.00	0.0061	50.9
250	14	19.50	0.0031	44.6
1440	12	19.50	0.0013	38.2

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRB-08-07: 2.0-2.3 (#1)	Melbourne, FL 32934			
Analysis Date: 6/17/09	Phone (321) 751- 1135			
Analyzed By: LA	Fax (321) 751- 2343			
X =29.409 Y = 89.602	Coordinate System: GCS NAD83		Depth (ft): 2.0-2.3	
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.78659	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	23	21.75	0.0082	48.2
5	21	21.50	0.0053	44.0
15	18	20.50	0.0032	37.8
30	17	19.75	0.0023	35.7
60	15	19.50	0.0017	31.5
250	13	19.50	0.0008	27.3
1440	11	19.50	0.0004	23.1

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRB-08-07: 14.0-14.3 (#4)		Melbourne, FL 32934		
Analysis Date: 6/17/09		Phone (321) 751- 1135		
Analyzed By: LA		Fax (321) 751- 2343		
X =29.409 Y = 89.602		Coordinate System: GCS NAD83		Depth (ft): 14.0-14.3
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.78405	Hydrometer ID: #2	Hydrometer Type: ASTM 151H	Composite Correction -.003	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	6	21.50	0.0363	19.0
5	6	21.00	0.0231	19.0
15	5	20.25	0.0136	15.8
30	4	20.00	0.0097	12.7
60	4	19.75	0.0069	12.7
250	4	19.50	0.0034	12.7
1440	4	19.50	0.0014	12.7

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRE-08-05: 8.7-9.0 (#1)		Melbourne, FL 32934		
Analysis Date: 6/23/09		Phone (321) 751- 1135		
Analyzed By: LA		Fax (321) 751- 2343		
X =29.350 Y = 89.506		Coordinate System: GCS NAD83		Depth (ft): 8.7-9.0
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.30174	Hydrometer ID: #2	Hydrometer Type: ASTM 151H	Composite Correction -.003	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	17	21.25	0.0326	55.4
5	15	20.75	0.0212	48.9
15	12	20.00	0.0128	39.1
30	11	19.50	0.0092	35.8
60	10	19.50	0.0065	32.6
250	8	19.50	0.0033	26.1
1440	7	19.50	0.0014	22.8

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRE-08-07: 0.5-0.8 (#1)		Melbourne, FL 32934		
Analysis Date: 6/23/09		Phone (321) 751- 1135		
Analyzed By: LA		Fax (321) 751- 2343		
X =29.345 Y = 89.498		Coordinate System: GCS NAD83		Depth (ft): 0.5-0.8
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.56826	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	25	21.25	0.0296	81.0
5	20	20.75	0.0201	64.8
15	16	20.50	0.0122	51.8
30	15	19.75	0.0088	48.6
60	14	19.50	0.0063	45.4
250	12	19.25	0.0032	38.9
1440	10	19.50	0.0013	32.4

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRE-08-08: 2-2.3 (#2)	Melbourne, FL 32934			
Analysis Date: 6/9/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X = 29.347 Y = 89.499	Coordinate System: GCS NAD83		Depth (ft): 2.0-2.3	
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.17761	Hydrometer ID: #3	Hydrometer Type: ASTM 151H	Composite Correction -.004	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	24	22.50	0.0295	78.4
5	22	22.50	0.0192	71.8
15	18	22.25	0.0116	58.8
30	16	22.25	0.0084	52.3
60	14	22.25	0.0061	45.7
250	11	22.00	0.0031	35.9
1440	9	20.50	0.0013	29.4

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRE-08-08: 6.7-7.0 (#4)	Melbourne, FL 32934			
Analysis Date: 6/9/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X = 29.347 Y = 89.499	Coordinate System: GCS NAD83		Depth (ft): 6.7-7.0	
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.43174	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	12	21.75	0.0342	38.2
5	11	22.00	0.0218	35.0
15	9	22.00	0.0128	28.7
30	8	22.50	0.0091	25.5
60	8	22.25	0.0065	25.5
250	7	21.75	0.0032	22.3
1440	7	20.50	0.0014	22.3

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRE-08-08: 9.5-9.8 (#5)	Melbourne, FL 32934			
Analysis Date: 6/9/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X = 29.347 Y = 89.499	Coordinate System: GCS NAD83		Depth (ft): 9.5-9.8	
USCS: SM	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.61443	Hydrometer ID: #3	Hydrometer Type: ASTM 151H	Composite Correction -.004	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	5	21.75	0.0366	16.2
5	4	22.00	0.0233	12.9
15	3	22.00	0.0135	9.7
30	3	22.00	0.0096	9.7
60	2	22.25	0.0068	6.5
250	2	21.50	0.0034	6.5
1440	2	20.50	0.0014	6.5

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRE-08-08: 12-12.3 (#6)	Melbourne, FL 32934			
Analysis Date: 6/9/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X = 29.347 Y = 89.499	Coordinate System: GCS NAD83		Depth (ft): 12.0-12.3	
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.08757	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	22	21.50	0.0307	72.0
5	18	21.75	0.0203	58.9
15	16	21.75	0.0120	52.3
30	15	22.25	0.0085	49.1
60	13	22.25	0.0061	42.5
250	12	21.50	0.0031	39.3
1440	11	20.50	0.0013	36.0

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRB-08-08: 16.0-16.3 (#7)		Melbourne, FL 32934		
Analysis Date: 6/9/09		Phone (321) 751- 1135		
Analyzed By: LA, JV		Fax (321) 751- 2343		
X = 29.347 Y = 89.499		Coordinate System: GCS NAD83		Depth (ft): 16.0-16.3
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.20788	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	16	21.50	0.0329	51.6
5	14	21.25	0.0213	45.1
15	13	20.50	0.0126	41.9
30	12	20.25	0.0090	38.7
60	11	20.00	0.0064	35.5
250	10	19.75	0.0032	32.2
1440	8	19.50	0.0014	25.8

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRE-08-09: 2.0-2.3 (#1)		Melbourne, FL 32934		
Analysis Date: 6/11/09		Phone (321) 751- 1135		
Analyzed By: LA, JV		Fax (321) 751- 2343		
X =29.351 Y = 89.509		Coordinate System: GCS NAD83		Depth (ft): 2.0-2.3
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.53782	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	21	21.50	0.0311	68.1
5	18	21.50	0.0204	58.4
15	16	20.75	0.0121	51.9
30	15	20.00	0.0087	48.6
60	14	20.00	0.0063	45.4
250	12	19.50	0.0031	38.9
1440	11	19.50	0.0013	35.7

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRE-08-09: 16.0-16.3 (#6)	Melbourne, FL 32934			
Analysis Date: 6/11/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X =29.351 Y = 89.509	Coordinate System: GCS NAD83		Depth (ft): 16.0-16.3	
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.07129	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction .001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	26	21.25	0.0292	83.4
5	24	21.00	0.0190	77.0
15	21	20.50	0.0115	67.4
30	18	20.00	0.0085	57.7
60	16	20.00	0.0061	51.3
250	13	19.50	0.0031	41.7
1440	11	19.50	0.0013	35.3

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRE-08-10: 0.9-2.1 (#1)	Melbourne, FL 32934			
Analysis Date: 6/17/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X =29.349 Y = 89.504	Coordinate System: GCS NAD83		Depth (ft): 0.9-2.1	
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 51.64537	Hydrometer ID: #2	Hydrometer Type: ASTM 151H	Composite Correction -.003	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	27	21.50	0.0287	84.0
5	24	21.00	0.0190	74.6
15	20	20.50	0.0116	62.2
30	18	20.00	0.0085	56.0
60	17	19.50	0.0061	52.9
250	14	19.50	0.0031	43.5
1440	11	19.50	0.0013	34.2

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine	715 North Dr. Suite E			
Sample Name: MRE-08-10: 2.4-2.7(#2)	Melbourne, FL 32934			
Analysis Date: 6/17/09	Phone (321) 751- 1135			
Analyzed By: LA, JV	Fax (321) 751- 2343			
X =29.349 Y = 89.504	Coordinate System: GCS NAD83		Depth (ft): 2.4-2.7	
USCS: SM	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.54745	Hydrometer ID: #3	Hydrometer Type: ASTM 151H	Composite Correction -.004	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	5	21.50	0.0367	15.9
5	5	21.00	0.0233	15.9
15	4	20.75	0.0136	12.7
30	3	20.25	0.0098	9.5
60	3	19.50	0.0070	9.5
250	2	19.50	0.0034	6.4
1440	2	19.50	0.0014	6.4

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRE-08-10: 17.6-17.9 (#4)		Melbourne, FL 32934		
Analysis Date: 6/11/09		Phone (321) 751- 1135		
Analyzed By: LA, JV		Fax (321) 751- 2343		
X =29.349 Y = 89.504		Coordinate System: GCS NAD83		Depth (ft): 17.6-17.9
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 50.54142	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	17	21.50	0.0325	54.0
5	15	21.00	0.0212	47.7
15	14	20.50	0.0124	44.5
30	13	20.00	0.0089	41.3
60	11	19.50	0.0065	35.0
250	11	19.50	0.0032	35.0
1440	9	19.50	0.0013	28.6

Hydrometer Analysis Report		 COASTAL TECH		
Project Name: Riverine		715 North Dr. Suite E		
Sample Name: MRE-08-13: 14.5-14.8 (#5)		Melbourne, FL 32934		
Analysis Date: 6/17/09		Phone (321) 751- 1135		
Analyzed By: LA		Fax (321) 751- 2343		
X =29.347 Y = 89.502		Coordinate System: GCS NAD83		Depth (ft): 14.5-14.8
USCS: ML-CL	Munsell:	Comments:		Dispersing Agent: (NaPO ₃) ₆
Dry Weight (g): 49.81424	Hydrometer ID: #1	Hydrometer Type: ASTM 151H	Composite Correction +.001	% of Total Passing: 100%
Time (min)	Hydrometer Reading	Temperature (°C)	Particle Size (mm)	Percent Finer (%)
2	21	21.50	0.0311	67.7
5	18	21.00	0.0205	58.0
15	16	20.50	0.0122	51.6
30	14	19.75	0.0089	45.1
60	14	20.00	0.0063	45.1
250	13	19.50	0.0031	41.9
1440	11	19.50	0.0013	35.5